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UNITED STATES DEPARTMENT OF AGRICULTURE
DEPARTMENTAL CIRCULAR

VOL. I

MAY 10, 1915

No. 1

FOREWORD.

The leaders of great commercial enterprises are spending a great deal of money and giving deep thought and attention to the problem of encouraging team play among the several independent departments or branches of their businesses. They appreciate that it is necessary to grant the manufacturing, assembling, raw material, executive, accounting, engineering, and sales departments certain independence of action and individuality. But to obtain complete results, they realize that all departments must so intermesh that the enterprise as a whole may work as a unit toward the development of the general business.

To bring about this unity of attack it has been found necessary for the engineering and manufacturing departments, for example, to have some understanding of the work of the selling force. *Vice versa* it is important that the sales force and advertising men should have real knowledge of how the goods to be sold are produced. It was discovered that where one department made an island of itself, it at once became less useful to its fellow departments and in the promotion of the general ideals of the firm. Efficiency men also pointed out that the workman who performs a single process on a machine throughout the day and week and year, and does not appreciate the true relationship of his highly specialized duty to the finished product, or is not encouraged to feel the importance of his seemingly small task to the world at large, necessarily becomes a routine worker and fails to get from his work the happiness and encouragement which come from a clear understanding of one's place in the drama of production.

These business houses, therefore, in addition to frequent direct communication through letter or memorandum with their executives and managers, commonly publish what is known as a "house organ." The purpose is to inform all employees of the objects of the business, to give to each department a better understanding of its own work in relation to that of other departments and to give the individual a better perspective as to the relation of his specialized task to the finished product and the entire business relationships of his employers.

The Departmental Circular now inaugurated has for its purpose the application of this successful business device to this department, which in final analysis differs from a large commercial organization only in that it seeks not to create monetary profit for itself but rather to benefit the producer, manufacturer, and consumer of agricultural products. In other words its intention is not to pay dividends on stock nor to increase its own bank account but to enable those whom it serves to become more successful and prosperous. To achieve this purpose to the fullest degree calls on this department for an even greater degree of interbureau and interoffice understanding, sympathy, and cooperation, and on the individual clerk, executive, or scientist for a still keener knowledge of the true bearing of his work, however small or specialized

or seemingly routine, on the full achievement of the department's altruistic purposes.

The primary object of the Departmental Circular is to give each one of us more complete knowledge of the work and purposes of all the rest. The circular, as defined in Memorandum 120, will aim "to afford a convenient method: (a) for outlining departmental policies and interpreting new legislation and orders; (b) announcing projects and changes in projects, and outlining opportunities for cooperation in general projects; (c) publishing notices and reports of hearings, meetings, conferences, etc.; (d) making accessible for departmental use certain material hitherto published only in outside publications and not obtainable in answering correspondence; (e) issuing material designed to promote *esprit de corps* and to give each member of the personnel more complete knowledge of the general activities of the department."

It is believed that the growth of the department in size and in complexity of duties makes necessary such a clearing house of information which will supply at regular intervals a survey of the department as a whole. This simply extends to the entire department the methods used successfully by each bureau in keeping its own employees informed as to its policies and work. If the program for the circular can be carried out, much valuable information now not common knowledge in the department will be made usable by all, and each should be helped to understand better where to go for cooperative assistance in any particular problem and how to make clearer to the people the ways in which they best can use the facilities and their right to seek the help which the department stands ready to give. A better understanding should promote broader sympathy on the part of each for the other's work, insure consistency of action and, finally, make easier effective individual and group cooperation.

It is requested that everyone connected with the department read each issue of the Departmental Circular carefully for information that will help him in his own work or help him to help others in their work. The first numbers necessarily must be experimental. What and how much knowledge is needed and in what form this knowledge can best be communicated have not been fully determined. The Departmental Circular will endeavor to meet demand for information as it develops. Its one purpose is to become of the greatest possible service to us in our work. The nearer it reaches this goal the greater must be its service directly and indirectly to the people who in this instance are the employers.

All who are connected with the department are cordially invited to make suggestions for the improvement of the Departmental Circular and to submit contributions for the circular and for the enlarged News Letter in accordance with Memorandum 124.

D. A. Houston

Secretary.

LETTERS OF INQUIRY.

It is essential for the largest success of the service of the Department of Agriculture that scrupulous care be taken in handling each letter of inquiry that comes to us. It does not matter that the letter in question is scrawled upon a scrap of wrapping paper, or that the question asked is foolish or trivial—it is ours to see that all reasonable effort is made to answer that question promptly and with courtesy. This department is the servant of all the people and each member of the personnel owes to the people, individually as well as collectively, the fullest possible measure of service.

Duly to appreciate the significance of the most trivial letter of inquiry, we must try to visualize the circumstances out of which it has come; to put ourselves in the shoes of the writer in so far as we can by an effort of the imagination. Take, for example, the letter of a boy on a little 50-acre farm situated far back from the main traveled roads, who writes on a postal card some elementary question about crops or soil improvement. That question seems vital to the boy who asks it, and we in answering it should feel a sense of how vital it is to him, for upon the way we answer it depends, in some measure at least, the future attitude of that boy toward the efforts we are making for the improvement of American agriculture. Certainly upon the way we answer hangs the question of whether or not that boy will ever ask us another question or ever become an active cooperator in the work we are doing. So it behooves us to handle the question with the boy's own viewpoint fully in mind; to remember always that, to him at least, the problem in hand is of profound significance.

The great potentiality of the Smith-Lever Act lies largely in the fact that it makes provision for the personal touch; that it gives the department, vicariously through the county agent, an opportunity to talk with the farmers and their wives and children face to face. The same sort of potentiality lies in large measure in this work of giving by mail direct answers to specific questions put to the department by the citizens who pay the taxes that foot the bills of administration. Through these letters we have a great opportunity for advancing the cause of scientific agriculture and for gaining for the department the good will and cooperation of those to whom the department is now, perhaps, but a vague abstraction.

Let us, therefore, do everything in our power to establish and maintain the closest possible relation between the department and the folks who seek its help in solving their individual problems. Let each of us make it his personal affair to see that no letter of inquiry that comes to him is ever dropped with mere perfunctory attention; that such letters invariably are answered in the fullest possible measure and in the true spirit of cooperation.

CARL VROOMAN, Assistant Secretary.

THE DEPARTMENTAL CIRCULAR is issued as a convenient means of intercommunication of official information among the personnel of the Department of Agriculture. Its circulation, therefore, will be limited to those having official connection with the department. Its editorial policy will be determined wholly by the specific class of readers for whom it is published and, therefore, may depart somewhat from the editorial policy governing material issued for the public. While the material to be published will by no means be confidential, the department can not extend the circulation of this publication beyond its own employees and official collaborators.

THE MONTHLY CROP REPORT.

The "Monthly Crop Report," a new monthly serial publication of the Bureau of Crop Estimates will be issued beginning with the month of May. The Crop Report, which will be a resumption in form and material of the old Crop Reporter discontinued with the issue of June 19, 1913, will publish as often as may be necessary data relating to agriculture including estimates of condition, yield, production, prices and values of crops and live stock, in the form of tabular statements, with such text summaries and comments as are necessary for their interpretation.

The Crop Report will succeed the Farmers' Bulletin known as "The Agricultural Outlook," discontinued by memorandum 134. The discontinuance of the Outlook and the substitution of a quarto-sized publication was determined upon because the new form will be less expensive and will enable the more rapid publishing and dissemination of information which must be issued very promptly to be of fullest service to the public.

The issuance of the special articles dealing with timely matters of production is to be continued, but full provision is now made for their wide publication through the circular series of the Office of the Secretary and through the enlarged Weekly News Letter. It is believed that by separating the two kinds of material more direct circulation can be secured for both classes of information.

The business of the student of farm management is to make an analysis of the operations of the farmer, to study the proper adaptation of the type of farming to local conditions, such as soil and climate, the size of the market, market demand and transportation, the quality of the farm business, its diversity, its organization, the distribution of farm enterprises, and the costs of each sort of product.—Annual Report, 1914.

PLAN YOUR WORK.

(Contribution from the Bureau of Chemistry.)

The ability to plan is the one thing that more than any other differentiates the efficient clerk from the inefficient. Where there are ten clerks who can successfully carry out plans, there is not more than one who can devise effective plans. Emphasis has been placed too exclusively on performing. Clerks have therefore failed to realize the importance of planning. Results count, and results have been associated with performing. Performing is the step that immediately precedes results, but we must not lose sight of the step that comes before performing, which is planning. Before there can be efficient performing, there must be effective planning.

Planning and performing are two separate functions. Failure to realize this is one reason for ineffective planning. In highly specialized organizations it is becoming the practice to have a planning department in which complete plans for every job and operation are carefully worked out. The men who show aptitude for planning are selected for this department. This insures that a well-considered, clear-cut plan will be provided for every job and operation. Many large business concerns have found that a planning department pays for its maintenance many times over in the course of a year by the increased output of the departments operating according to the plans. The same principle applies to the small office or to the individual job. In that case, however, the same person does the planning and the performing, but should recognize them as separate and distinct functions. A definite portion of time should be given to planning as regularly as to performing.

A plan should be clear and specific. It should be reduced to writing. If the plan covers a continuous operation, it should be studied from time to time and revised wherever and whenever improvements can be devised. In addition to the increased efficiency in the performance of the work that will result, the mental training afforded by planning is worth the time and effort required.

After a clerk has attained a maximum speed so far as the mechanical process of the job is concerned, the only further progress in efficiency that is possible is in the matter of planning. And there is no limit to the advancement that may be made in that line.

Each clerk can find opportunity to plan in connection with his job even though the general scheme under which he works is outlined for him by the man in charge of his work. In such cases he should be sure that his plan fits in with the general scheme, under which he operates. He should realize that his part of the work is a part and must fit in with the whole. However mechanical and routine his duties may be, a clerk who gives proper attention to planning, will always find ways to increase his efficiency in that particular job, and thus demonstrate his fitness for more important work.

REORGANIZATION OF WORK.

The full text of the two memoranda covering the reorganization of the work of the department is published below for the convenience of those who may wish to refer to them.

MARCH 10, 1915.

MEMORANDUM No. 121.

REGARDING REORGANIZATION OF THE WORK OF THE DEPARTMENT OF AGRICULTURE.

In the agricultural appropriation Act for the current fiscal year, the Secretary of Agriculture was authorized and directed to prepare a plan for reorganizing, redirecting, and systematizing the work of the Department of Agriculture as the interests of economical and efficient administration may require, and to submit such plan in the Book of Estimates for the fiscal year 1916. In accordance with this direction, a proposed plan of reorganization was submitted in the estimates and has been approved by the Congress, having been included in the agricultural appropriation Act for the fiscal year 1916, approved March 4, 1915. The plan involves the following changes:

1. Specific provision is made for the Office of Markets and Rural Organization by that name.

2. The Office of Farm Management, including the "logged off" land investigations, becomes a unit of the Office of the Secretary. The investigations of the utilization of cacti and other dry-land plants and the most effective methods of eradicating weeds, now conducted by the Office of Farm Management, remain in the Bureau of Plant Industry. The following lines of work, now carried on by the Office of Farm Management, are transferred as indicated: The farm architectural work to the Office of Public Roads and Rural Engineering, the farm home management work to the States Relations Service, and the farm credit and farm insurance investigations to the Office of Markets and Rural Organization.

3. Studies of the biology of insects parasitic to animals are to be conducted by the Bureau of Entomology.

4. The cotton standardization work, with the exception of certain technological investigations, is transferred from the Bureau of Plant Industry to the Office of Markets and Rural Organization.

5. The name of the Office of Experiment Stations is changed to the States Relations Service. The farm demonstration work in the Northern and Western States and in the Southern States and the farm home management work now conducted by the Office of Farm Management are transferred from the Bureau of Plant Industry to this Service. The title "Nutrition Investigations" is omitted from the item for investigating the relative utility and economy of agricultural products for food, clothing, and other uses in the home, but the language of the item itself is unchanged. Additional language, however, is included in the appropriation for the Bureau of Chemistry to authorize that Bureau to conduct investigations of the physiological effects of foods upon the human organism which are now carried on by the Office of Experiment Stations under the item "Nutrition investigations." The work of the States Relations Service under

this item, with the title eliminated, will be redirected and limited to home economics investigations, including investigations on foods, clothing, and household equipment and management.

6. The name of the Office of Public Roads is changed to the Office of Public Roads and Rural Engineering. The irrigation and drainage investigations now carried on by the Office of Experiment Stations and the farm architectural work now conducted by the Office of Farm Management are transferred to the Office of Public Roads and Rural Engineering.

7. The poisonous plant investigations, so far as they relate to the effect of such plants on animals, are transferred from the Bureau of Plant Industry to the Bureau of Animal Industry.

8. The soil-fertility investigations now conducted by the Bureau of Soils are transferred to the Bureau of Plant Industry.

9. The farm credit and farm insurance investigations now conducted under the Office of Farm Management, and the investigations now carried on by the Dairy Division of the Bureau of Animal Industry regarding the marketing of milk, are transferred to the Office of Markets and Rural Organization.

10. The wood distillation work now conducted by the Bureau of Chemistry is transferred to the Forest Service.

11. Additional language is included in the item for poultry and egg investigations in the Bureau of Chemistry to provide that such investigations shall be carried on in cooperation with the Bureau of Animal Industry and the Office of Markets and Rural Organization.

Accordingly, it is hereby ordered that these changes be carried into effect on July 1, 1915. Each chief of bureau or office concerned is requested to proceed immediately to make the necessary adjustments so that they can actually be accomplished on that date with the minimum amount of hindrance or delay to the lines of work involved. In the meantime, however, it is important, and it is so ordered, that the chief of the bureau or office to which a line of work is to be transferred should be kept fully advised regarding the progress of the work and freely consulted with reference to all matters connected therewith, excepting those of a purely routine character. It is particularly important that no new projects should be undertaken or any pending projects discontinued, or any important changes in the personnel made, without the approval of the chief of the bureau or office to which the work is to be transferred.

In addition to the plan of reorganization submitted in the estimates, it was decided, after careful and thorough consideration, that greater efficiency would result by definitely outlining or segregating within each bureau the three main groups of activities of the department, namely, the regulatory, the research, and the extension—that is, the regulatory functions should be so segregated or outlined as not to interfere with the research work, or either of these with the educational or extension work; but, on the other hand, they should be so organized and related that each will reinforce and foster the other. In order to accomplish this purpose, each chief of bureau, division, inde-

pendent office, or board should give the matter prompt and careful consideration with a view to formulating a definite plan for segregating the regulatory, the research, and the extension work under his supervision in the manner suggested. This plan, accompanied by a chart showing in graphic form the proposed segregation, should be submitted to the Secretary not later than May 1, 1915, in order that it may be carefully considered by him, and, if approved, put into effect when the other changes referred to above are made.

D. F. HOUSTON,
Secretary.

APRIL 1, 1915.

MEMORANDUM No. 129.

REORGANIZATION OF THE WORK OF THE DEPARTMENT OF AGRICULTURE.

Preliminary to the carrying into effect on July 1, 1915, of the plan of reorganizing the department, as outlined in Memorandum No. 121 of March 10, 1915, it is ordered that, in addition to the duties heretofore performed by them, during the remainder of the fiscal year 1915, Dr. A. D. Melvin will supervise that part of the poisonous plant investigations relating to the effect of such plants on animals in the Bureau of Plant Industry; Mr. W. A. Taylor will supervise the soil fertility investigations in the Bureau of Soils; the States Relations Committee will supervise the farm demonstration work in the northern and western States and in the Southern States in the Bureau of Plant Industry; Dr. A. C. True will supervise the farm home management work in the Bureau of Plant Industry; Mr. L. W. Page will supervise the farm architectural work in the Bureau of Plant Industry and the irrigation and drainage investigations in the Office of Experiment Stations; and Mr. C. J. Brand will supervise the farm credit and farm insurance investigations and the cotton standardization work, with the exception of certain technological investigations, in the Bureau of Plant Industry. The work of the Office of Farm Management in the Bureau of Plant Industry will be supervised by the Secretary.

D. F. HOUSTON,
Secretary.

INDEX TO ALL PUBLICATIONS.

References to any subject in the department publications will be furnished by the index section of the Division of Publications on request from any one entitled to them. The references cover the whole field of the department books, but are more complete and full for those of recent years.

The card system shows whether the publications to which the references run are available for distribution or must be bought of the Superintendent of Documents, and also give some intimation of the length and importance of the references.

To anyone proposing to make an investigation or to write on an agricultural subject these references should be helpful.

USE OF TELEPHONES.

(Contribution from the Office of the Chief Clerk.)

Because of the recent rapid growth of departmental telephone business considerable additional equipment is about to be installed in the department telephone exchange. This equipment is under construction and will be in service within a few weeks. It therefore seems appropriate at this time to call attention to certain considerations in regard to telephone service in general.

It should be remembered that the work of the telephone operators involves a severe nervous strain. For this reason they are entitled, as your fellow employees, to such consideration as you expect from them. Impatience with or rudeness to telephone operators accomplishes nothing and, in fact, tends to defeat your own object, which is to get prompt and courteous service. Our operators are under rigid instructions to give the best service within their power; to be courteous to everybody and to avoid strictly anything approaching controversy or recrimination. They faithfully observe these principles. It is, in fact, to their own interests to give to all, without any discrimination whatsoever, the most prompt and accurate service possible. They have nothing to gain by delaying your connections and everything to lose. When delays occur these facts should be kept in mind and a reasonable patience exercised.

In using the outside telephones make your conversation as brief as possible. The department has only 10 trunk lines, and only 10 of our 2,500 Washington people can use the outside phones at one time. Unnecessarily extended conversations therefore may delay others in making important outside connections. Use the inside telephones as far as possible for inter office communication.

Improved service will result from a certain cooperation between telephone users and telephone operators. The following points are worth considering in this connection:

Before calling.—Before making your call, be sure that the number you ask for is correct. A wrong number delays the caller, annoys the person called, and retards service.

Calling.—When you wish a connection on the outside (C. & P.) system the department's operator, upon receipt of your signal, will respond with the word "Switchboard." You should then proceed as follows:

(a) For a local call in Washington say "Local." You will then be connected with the central exchange of the C. & P. system, and upon response from that exchange should ask for the desired number, giving the name of the exchange and the number wanted—as "Main 1-0-0-9," pronouncing each number separately, naming zero as if it were the letter "O."

(b) For a long-distance call say "Long distance," and furnish the department's

operator with the fullest possible information as to the name and home or business of the person desired, so that no delay may occur in obtaining connection. When connection is made you will be called by the department operator.

(c) For a connection with another department of the Government, say "Government." You will then be given a connection with the Government wire operator of the C. & P. system, and should advise her of the department with which you wish to communicate.

Speak close to the mouthpiece in a clear tone of voice. There is a happy medium between whispering and shouting. Do not speak in a listless monotone—emphasize each syllable or number slightly.

To attract the operator's attention move the telephone hook slowly up and down. This is important, as a rapid, impatient joggling of the hook defeats your own object. Rapid movement does not signal the operator.

Answering.—Answer calls promptly. Failure to do so keeps the person calling waiting and doubtful whether his call is receiving proper attention at the hands of the department operator and may result in the loss of a message.

When you answer the inside telephone reply by giving the name of your office and your own name, thus: "Cereal Investigations; Smith speaking."

In answering the outside telephone give the name of the bureau also, thus: "Plant Industry, chief clerk; Smith speaking."

The person calling, on getting the above reply, should state the name of his office and his own name, thus: "Meat Inspection; Jones speaking."

Complaints.—If you have a complaint to make, make it definitely and specifically to the supervising operator in charge at the time the incident occurs. Do not wait several days and then criticize the telephone service in harsh terms for something which might have been investigated and corrected at the time.

Remember that the telephone operators are ladies and gentlemen. They as well as persons with whom you are conversing are entitled to the same courtesy over the wire that you would undoubtedly accord them face to face.

Be patient. The failure of the person at the other end of the wire to understand you may be due to your own indistinct speech.

Your cooperation along the lines suggested above will improve the service from your point of view and lessen the strain upon the operators.

Attention is called to paragraph 132 of the Administrative Regulations, as follows:

"Use of official telephones for private business.—The use of official telephones for outgoing private messages is strictly prohibited; such messages must be sent from the public

booths. Important and necessary incoming messages may be received, but supervisory officers of the various bureaus, divisions, and offices must see that this privilege is not abused."

AGRICULTURAL EXTENSION.

(Contribution from the States Relations Committee.)

The cooperative agricultural extension act of May 8, 1914, commonly known as the Smith-Lever Act, crystallized in law and nationalized a form of instruction which has been recognized as necessary and has been carried on in various ways for a number of years by the Department of Agriculture and the agricultural colleges and other State agencies, namely, instruction and practical demonstrations in agriculture and home economics to persons not attending or residing in agricultural colleges. This has been characterized by the Secretary of Agriculture as in the aggregate the largest and "in many respects the most significant piece of educational work that any nation has ever undertaken."

The Smith-Lever Act went into effect July 1, 1914, with an initial annual appropriation of \$10,000 to each State. Every State in the Union has now complied with the requirements of the act, and all of the agricultural colleges have organized separate and distinct divisions or departments for the conduct of the extension work provided for by the act.

One of the first steps taken in organizing the work was to coordinate the activities of all the extension agencies, including the demonstration work of the Department of Agriculture, for which more than \$1,000,000 annually is appropriated. It has been arranged to carry on all this work in cooperation with the agricultural colleges, all funds available to the colleges, as well as those furnished cooperatively by the department, being administered by the college officers in charge of extension work. The work is to be conducted on the basis of definite projects mutually agreed upon. Projects covering a variety of activities have been approved and entered upon.

The main features of the general plan so far as it has been developed up to the present time include (1) the location of extension agents in the different counties to carry on demonstrations, advise the agricultural people, and encourage the adoption of better methods, (2) the organization of boys' and girls' clubs, largely in connection with the rural schools, to conduct simple agricultural or home economics projects, and (3) the organization of a staff of specialists in agriculture and home economics as a part of the faculty of the college, to go out through the State and assist the county agents by giving expert advice, conducting special demonstrations, holding movable schools, and similar enterprises.

The most fully developed feature of extension work at the present time is the county agent work. About one-third of the 3,000 counties in the United States are now provided with agents who are trained in the science and practice of agriculture, familiar with farm conditions, and seek not only to improve agricultural practice but to aid in bettering conditions in the farm homes and communities. About 400 women trained in home economics and familiar with farm conditions are now associated with the county agents in the work of betterment of farm homes, and it is proposed to increase this number as rapidly as possible.

The extension agents in the counties, whether men or women, will aid the men, women, and children on the farms to make their farm work more profitable and thus enable them to improve their living conditions, including the sanitation of the farms and houses, better and more convenient water supply, labor-saving appliances, etc. The women will also be aided in matters relating to foods, household equipment and management, and various home industries, such as the raising and marketing of poultry, bees, vegetables, and fruits.

It has been found that the extension work can be most effectively carried on if the extension agents are actively supported by voluntary organizations of farm people in the several counties. These are being formed in a variety of ways and under different names, as farmer's clubs, farm bureaus, home improvement clubs, boys' corn or pig clubs, girls' canning clubs, etc.

The department's work connected with this extension system will be carried on through the States Relations Service, the establishment of which is authorized by the appropriation act for the fiscal year 1916 and to which the farm demonstration work in the Northern and Western States and in the Southern States will be transferred. The different bureaus of the department will aid in the extension work in the States by carrying on special projects for which they have funds, by the preparation of publications for use in extension work, by sending out specialists to instruct and aid the extension agents in the States, and by furnishing assistance in a variety of other ways through correspondence or otherwise.

In the States the extension divisions of the agricultural colleges will have the cooperation of the State departments of agriculture and education, other colleges equipped for work in home economics, and in rural economics and sociology, normal schools, county officials, school superintendents and teachers, and a great variety of State, county, and local organizations of farmers, women, and business and professional men.

All persons who are interested in the development of this extension system should get in touch with the agents in their respective counties or with the director of the ex-

tension service at the State agricultural college. A circular giving further information about the present status of the extension work in the United States will soon be issued by the department as Circular — of the Secretary's Office.

The Frank and Extension Work.

The agricultural appropriation act for the current fiscal year contains a provision permitting the transmission in the mails, free of charge for postage, of correspondence, bulletins, and reports in furtherance of cooperative agricultural extension work under the Smith-Lever Extension Act. Since this provision was contained in an annual appropriation act, the question arose as to whether or not college officers engaged in such work were entitled to the benefit of the franking privilege after the close of the fiscal year. Upon consideration of this question at the request of the Secretary of Agriculture, the Postmaster General, on April 28, 1915, stated that the Post Office Department regards the particular provision as permanent legislation.

Only a single college officer or other person connected with the extension department of each agricultural college is entitled to the free use of the mails, under the terms of the provision, as the Secretary of Agriculture may designate to the Postmaster General. In sending matter in the mails free, the persons who have been designated by the Secretary of Agriculture are required strictly to observe all the conditions and restrictions in section 504½, Postal Laws and Regulations.

Meeting of State Leaders.

A meeting of State and assistant State leaders for the North Atlantic division of cooperative extension work was held in Boston on March 3 and 4. All States of the division except Ohio were represented. The discussion centered around three subjects:

1. Efficient county organization and administration for farm bureau work.
2. Projects for county agent work.
3. Commercial work and farmers' exchanges, and their relation to the county farm bureau association.

It was the sentiment of those in conference that there should be a strong county organization to support the county agent.

The members voted in favor of putting the county agent work on a project basis for 1915.

In relation to commercial work, it was clearly shown that the county farm bureau association receiving public funds should not be a purchasing or selling association, but that this work should be done by local associations organized for the purpose. They may be fostered and encouraged by the county association, but the work should be

separate. The association receiving public funds for its support must confine its work to educational lines.—Farm Demonstration Monthly.

PURCHASE OF CAMERAS.

Memorandum No. 128 (Amendment No. 1 to the Fiscal Regulations), issued by the Secretary March 31, 1915, added to the Fiscal Regulations the requirement that no cameras or lenses shall be purchased for use in the department without specific authority of the Secretary. This regulation is deemed necessary in the interest of standardizing the photographic equipment of the department and also of eliminating, as far as possible, the purchase of unnecessary or very expensive cameras, particularly when the new instruments are intended simply to replace cameras in good condition or of different types. Before submitting requisitions for cameras or lenses, a careful survey should be made in order to determine whether the equipment already in the possession of the bureau or office can not be so readjusted as to obviate the necessity for the purchase of new photographic equipment. Due consideration will be given in each case as to whether the photographic work to be undertaken necessitates the purchase of a special type of apparatus.

DIVISION OF EFFICIENCY.

The last Congress provided, in appropriating money for the Civil Service Commission, for a division of efficiency whose work will affect employees in the Department of Agriculture as well as in all other Government departments.

The section of the appropriation act creating this division is as follows:

"For establishment and maintenance of system of efficiency ratings, pursuant to section four of the legislative, executive, and judicial appropriation act for the fiscal year nineteen hundred and thirteen, for investigation of the needs of the several executive departments and independent establishments with respect to personnel; and for investigation of duplication of statistical and other work and methods of business in the various branches of the Government service; including not more than \$2,500 for equipment, supplies, stationery, books, and printing; and not more than \$50 for street car fare, \$30,000; the chief of the Division of Efficiency herein provided for shall be appointed by the President and shall report to Congress at the beginning of each regular session, through the President, the nature and progress of the work undertaken by the division together with a detailed statement of expenditures showing the persons employed, their duties, and the compensation paid to each: *Provided*, That no person shall be employed hereunder at a compensation in excess of \$4,000 per annum."

MOTION PICTURE WORK.

(Contribution from the Committee on Motion Picture Activities.)

The work of the department in developing motion picture films which was made a definite project by Memorandum No. 55, of December 18, 1913, has fairly passed from the experimental stage in at least one important particular. The motion picture laboratory, which is part of the Section of Illustrations of the Division of Publications, has fully demonstrated its ability to produce educational films of a photographic excellence which easily equals the work of the best commercial motion picture photographers. Since the commencement of the work the photographers, although handicapped for nearly a year by a makeshift laboratory and inadequate equipment, have taken and developed 32 complete films, aggregating over 30,800 feet of valuable negative. In addition to this there are under development over 5,000 feet, dealing with three subjects, either completed or now being taken as seasonal opportunity permits field work in the various stages of the films.

The laboratory recently has moved into its new and specially equipped quarters in the basement of the building at 1358 B Street SW., and should soon be in position to produce an even greater amount of valuable film.

Several problems yet remain to be solved before any wide outside use of the films can be made and before any exact definition of the value of the films as adjuncts in agricultural education can safely be formulated.

It is realized that before films of this character can be made fully helpful to the farmers, means whereby exhibitions can be given in country churches and schoolhouses where no commercial electric current is available must be devised. Tests are therefore being made of all known motion-picture projectors, and the help of electrical and automobile experts is being sought in order to develop a method whereby current can be developed from an automobile or other portable outfit in remote farming districts. This investigation also includes tests of means other than electric power for generating the necessary light. In this work the War Department has courteously placed at the disposal of the department the results of tests of motion-picture apparatus conducted by its engineers.

TESTING THE TEACHING VALUE OF FILMS.

The application of motion-picture films to education is, however, still in its infancy. The term "educational film" as commercially understood is applied commonly to any subject which is not the portrayal of dramatic action. Very few of the so-called educational films have been designed with a view of teaching the spectators to perform any definite process. Most of them are simply pictures of

places and events and are educational in the sense that an illustrated book of travels would be placed in this class in distinction to a volume of fiction. Attention is being given, therefore, to the application of pedagogical methods to visual instruction. In showing such subjects as the germination of seeds, or other processes which must be taken intermittently over a long period, the department is determined that the film shall be an honest scientific record of the process depicted, rather than the result of optical illusions.

The degree to which motion picture films can be made direct teachers of agricultural processes is another problem which is being investigated. Several of the films secured or made by the bureaus before the work was formally inaugurated, and a number of films since developed, have been used before audiences in various sections and careful estimate has been made of their value and effect. In general the lecturers who show these films report that they attract favorable attention and certainly are received with great interest by the audiences. Some of the lecturers assert that showing the film had a direct educational effect. The more experienced held that the chief benefits were in attracting larger audiences, the pleasure the people derived from seeing the pictures, and the aid to complete understanding of the lecture or subject that the pictures afforded. The pictures enabled those who saw them to visualize into concrete action the otherwise abstract points of the propaganda.

The pictures served to break the ice for a more cordial reception of the new ideas, because they gave the people actual proof that the same methods are being used successfully and indorsed, in actual practice, by farmers elsewhere. Undoubtedly, the films have a value in indirect education, in stimulating general interest in the subject, and as an element in propaganda.

REGARDING THE USE OF FILMS.

Many educational and philanthropic institutions and organizations and a number of commercial activities have requested the use of the department's films. Commercial motion-picture companies also have become interested in securing the use of the department's subjects for general showing in public motion-picture theaters throughout the country. However, because of the fact that the laboratory, with its present equipment and available funds, has not yet been able to produce enough positive prints to supply the needs of the department's own lecturers, it has been unwise to undertake, for the present at least, any wide distribution of the films. All requests from outside agencies to purchase, rent, or borrow department films accordingly have been refused, and such films as have had a public showing have been exhibited only under the direct control of one of the department's repre-

sentatives. In all probability, additional legislation would be necessary before the department could successfully undertake cooperation of this character without very heavy expenditures of Federal funds. Under present conditions any money received from the sale of films must be turned back into the Treasury, and the department accordingly would be forced to deplete its own special photographic appropriations.

REGULATIONS GOVERNING MOTION PICTURES.

Experience has made clear the importance of accurately defining the methods under which films should be taken so as to obviate waste of time of photographers and loss of material. The conclusions in this direction are embodied in Memorandum No. 126, March 26, 1915, which in part is as follows:

"The following rules hereafter will govern the motion-picture work:

"1. No motion-picture work will be undertaken until a definite and complete scenario has been submitted and approved and time given for the photographic laboratory to study the scenario from the photographic standpoint.

"2. Before any motion picture is taken, the scientist in charge of the subject shall go over the ground with the photographic director and definitely map out the scenes.

"3. In matters of photography, the opinion of the photographic director as to the feasibility of taking the subject, proper lighting, etc., shall be final.

"4. So far as practicable, scenes not essentially related to a special region should be staged in or about Washington, where facilities exist for the more effective and economical setting of the scenes.

"5. Films should be nonsectional, with the idea that they will be of service to the entire department, in so far as these objects can be achieved without interference with the specific educational purpose of the film."

Those contemplating submitting scenarios are referred in addition to the following memoranda which govern the activities and outline the methods of presenting projects for new films: Memoranda No. 41, September 12, 1913; No. 55, December 18, 1913; No. 72, February 12, 1914; and No. 95, June 26, 1914.

MOTION PICTURE EXHIBITIONS.

The films have met with great favor and have aroused great interest on the part of those whose work is depicted. As a result the laboratory has been beset with requests to show special films. Inasmuch as the projection room is also used in assembling films and in preparing legends, special exhibitions have a tendency to interfere with and delay the work of production. To avoid this, it is deemed wise to arrange for general exhibitions of films only on Friday afternoons after 2 o'clock. This does not, of course, refer to the test showings made from time to time by

the laboratory for the purpose of criticising the films and arranging legends. Where special reason for exhibition arises, the chairman of the committee on motion pictures and the Chief of the Section of Illustrations are authorized to make an exception provided such an exhibition can be so arranged that it will not interfere seriously with work in progress.

List of Subjects.

For the benefit of those who may be interested, the following list of films completed by the laboratory is given:

BUREAU OF PLANT INDUSTRY.	Number of feet in film.
Cooperative Strawberry Growing, Warren County, Ky.....	1,600
Congressional Seed Distribution.....	800
Visit of Boys' and Girls' Clubs to Washington.....	2,000
Bridge Grafting an Injured Fruit Tree.....	200
Poison Effects on Sheep.....	200
Operation of Pump for Hot Water Supply for Country Houses.....	600
BUREAU OF ANIMAL INDUSTRY.	
Cooperative Cow Testing in Vermont.....	1,000
Uncle Sam's Pig Club Work.....	2,000
Army Horse Breeding Investigations.....	1,000
Kentucky Horse Breeding Investigations.....	1,000
Building a Concrete Silo.....	1,000
FOREST SERVICE.	
The Work of a Forest Ranger.....	1,000
Lumbering Lodgepole Pine.....	1,000
The Grazing Industry of the National Forests.....	1,000
Lodgepole Pine for Railroad Ties.....	800
Tree Planting in the National Forests.....	1,000
National Forests as Recreation Grounds.....	600
"Bull Run"—Portland's Water Supply.....	400
Lumbering Yellow Pine in the Southwest.....	1,000
Forest Fires.....	1,000
Forest Laboratory at Madison, Wis....	1,000
OFFICE OF PUBLIC ROADS.	
Testing Rock to Determine its Value for Road Building.....	400
Road Construction and Maintenance.....	1,000
Rock Tests with Traction Dynamometer.....	200
Concrete Road Construction (Ohio post road).....	1,000
Macadam Road Construction (Maryland post road).....	1,400
Gravel Road Construction (Virginia post road).....	800
Bituminous Macadam Road Construction (Maine post road).....	1,000
Cement and Concrete Tests.....	800
BUREAU OF CHEMISTRY.	
American Sardine Industry of Maine.....	2,000
Corn from the Field to the Can.....	1,000
MISCELLANEOUS.	
Visit to the National Zoological Park.....	1,000

FILMS UNDER WAY.

Poultry Work at Experiment Farm.
Bureau of Animal Industry.
Eradication of Gipsy Moth. Bureau of Entomology.
The Work of a County Agent.

FILE COPIES OF FILMS.

At present the only copies of these films available are the property of the bureau originating the films, and members of the department wishing to secure them must apply to the chief of the bureau concerned. Now that the work for the Government exhibit at the Panama-Pacific Exposition has been completed, the matter of preparing a file positive of each film will be taken up. These positives, for which film will be supplied by the bureau in accordance with Memorandum 95, June 26, 1914, are to be held by the Office of the Secretary for the purpose of exhibition in Washington. In special cases where other copies of the films are not accessible permission may be obtained, through the chairman of the Motion Picture Committee, subject to the approval of the Secretary, for brief emergency use of these copies. As the different bureaus furnish material, extra prints are being made for field use. For the present only emergency subjects will be taken and new projects will not be instituted until the films at present under way are completed and additional positives produced for the use of the bureaus.

ENTOMOLOGY ITEMS.

Much work has been done this spring in the study of the fruit fly in Hawaii. In connection with this study other insects affecting coffee have been investigated. An encouraging feature of the work is the discovery that one of the fruit fly parasites introduced under the auspices of the Territorial Board of Agriculture has already proved itself unusually efficient. The parasitism among the larvæ of the fruit fly in coffee berries often ranges around 80 per cent. In other host fruits the parasitism of the fruit fly larvæ varies very widely. On the whole, it appears that this introduction of the parasite has been a distinct success. The parasite in question is the *Opius humilis*.

The index of economic entomology which is to include all the literature on the subject since 1905 is now fairly under way. More than half of the literature originating in the experiment stations has been indexed, and work under the Bureau of Entomology is near to completion. It is expected that when finished there will be nearly 25,000 entries in the index.

Insects and National Parks.

Arrangements have been made with representatives of the Interior Department by which that department and the Bureau of

Entomology will cooperate in the prevention of insect depredations in the national parks. Under the new system the Department of the Interior will detail representatives to the Bureau of Entomology who will work under the immediate instruction of an entomological ranger who has been trained as an expert in insect control. The men from the Department of the Interior in this way will be trained in the practical details of forest insect control and prevention in the national forests.

Tanbark Borer.

An inspection of lumber mills in the mountains of West Virginia, in which a representative of the Indian Imperial Forest Service took part, has shown that the recommendation of the bureau to use all hemlock tanned bark before it is 4 years old has been followed out with gratifying success. In one tannery a previous investigation had shown that out of a total of 20,000 cords of bark, about 10,000 were badly damaged by the tanbark borer. No appreciable damage, however, was found in bark less than 3 years old.

Codling Moth.

A new laboratory has been established in cooperation with the Colorado Agricultural Experiment Station in the Grand Junction district of that state. This laboratory will give particular attention to the study of the biology of the codling moth, which has been for some years unusually destructive in the Grand Valley. For some reason methods of control which have proved successful in other regions do not yield satisfactory results here.

A laboratory at Winthrop, Me., has been discontinued after a life of two years, the codling moth studies in that region having been completed and results prepared for publication.

Demonstrations and Experiments.

In preparing their projects, county agents need to distinguish very carefully between demonstrations and experiments. It is the work of the State experiment stations to plan and carry on experimental work. Some of the county agent's demonstrations may have an experimental value, but they should be planned with the teaching purpose. What is a demonstration from the standpoint of the county agent may be an experiment as it is carried on by the farmer—that is, the farmer gets his lesson as a result of doing a particular piece of work and seeing the results, while the agent, knowing from previous trials what the results will be, looks upon the work as a demonstration.—(Farm Demonstration Monthly.)

PLANT INDUSTRY.

(Contribution from the Bureau of Plant Industry.)

The lines of work contemplated under the increased appropriation of \$5,000 for cereal rust investigations, practically all of which are new, may be itemized as follows:

1. A study of the rust-in-seed problem and certain physiological studies related thereto, such as influence of temperature, moisture, and host characteristics on development of the rust organism and the severity of infection, this being chiefly a physiological study with the economic significance that it may lead to more definite information on the manner of infection of the plant.

2. In cooperation with the Minnesota investigators further attention will be given to the relationships of grass rusts to cereal rusts and the study of seasonal migration of rusts and of their distribution.

3. To add to our information on rust resistance and the nature and cause of rust epidemics from a geographic standpoint, new work in these lines will be undertaken in cooperation with the University of Tennessee.

4. By inoculation experiments in cooperation with the Iowa State College all of the species of buckthorn that carry the first stage of the crown rust of oats will be ascertained, if possible. The solution of this question, which is yet wholly undetermined in this country, may be of much importance in preventing rust.

5. Through the field agents, constant observations will be made during the summer months to determine the occurrence and severity of rust epidemics in the northern Great Plains region and in the Southern States and to collect such other data as may have direct bearing on the cereal rust problem.

Citrus Canker in Philippines.

It has recently been discovered that citrus canker, the disease which has proved so destructive to grapefruit and orange groves in the Gulf states, also occurs in the Philippine Islands. Importations of citrus budwood from those islands, received by the Bureau of Plant Industry in April, were found to be so badly infested with canker that it was necessary to destroy them by fire. As this disease had not been reported from the Philippines until these shipments reached Washington and were found to be infected, it is feared that material from those islands may have been introduced into this country before the Federal quarantine order went into effect, bringing with it this dread disease. All department workers are therefore urged to exercise extreme caution in handling any foreign citrus material of recent importation into this country.

In the April number of the Journal of Agricultural Research the causal organism of this disease was described by Miss Clara H. Hasse

as *Pseudomonas citri* n. sp. The recent discovery that the disease is of bacterial causation and not due to some parasitic fungus, as has been generally believed, emphasizes the necessity of extreme caution in handling this contagious malady.

Mr. Walter T. Swingle, physiologist in charge of the Office of Crop Physiology and Breeding Investigations, this department, who is making an official trip through Japan, reports that canker is a new disease in Japan, but a serious one where the climate is wet. Even the kumquats, which in this country have so far seemed immune, are reported as being attacked by the canker there in autumn.

Work in Cotton and Truck Diseases.

The work on cucumber diseases will comprise the following: Studies of cucumber scab (*Cladosporium cucumerinum*), downy mildew, white pickle, bacterial leaf-spot, and anthracnose, and the effect of fungicides on the setting of fruit, together with the development and testing of control methods, the breeding of disease-resistant varieties, and a series of general experiments covering varietal, fertilizer, and spraying tests and crop rotations.

The work will be conducted in cooperation with the H. J. Heinz Co., of Pittsburgh, Pa., and the experiment stations of Wisconsin, Michigan, and Indiana. Three field stations will be established, at Princeton, Wis., Plymouth, Ind., and Big Rapids, Mich., at each of which one graduate student assigned by the experiment station, one department pathologist, and one representative of the Heinz Co.'s Growers' Service Department will be stationed during the summer months. W. W. Gilbert, of this department, has been placed in charge of the work. He will be assisted in Wisconsin by Eubanks Carner and Max W. Gardner and in Michigan by S. P. Doolittle. Other assistants have not yet been selected.

BREEDING WILT-RESISTANT CABBAGE.

Under the leadership of L. L. Harter and in cooperation with the experiment stations of Wisconsin, Delaware, North Carolina, and Maryland, work will be conducted on the breeding of varieties of cabbage resistant to the Fusarium wilt or "yellows" disease. Efforts will be made to produce resistant strains of at least three types of cabbage, including early, winter storage, and kraut cabbage. Seed of varieties which have been bred by Prof. L. R. Jones, at Madison, Wis., and found to be resistant to wilt at that point will be tested at the other cooperating stations on infected land, together with a large number of commercial varieties adapted to local conditions, from which it is expected to make further selections. Similar tests will be made at the Iowa and Ohio stations in direct cooperation with the Wisconsin station.

POTATO-DISEASE INVESTIGATIONS.

The work on potato diseases to be conducted at the new field station at Greeley, Colo., will consist of investigations of leaf-roll, curly-dwarf, Fusarium wilt, Rhizoctonia troubles, and associated diseases occurring in the Western States, together with a study of their relation to the potato-seed industry, and the development of methods of control. In addition to the disease studies, physical studies will be made to determine the relation of environmental factors to disease progress. Tests will also be made to determine the freedom from disease of Wisconsin seed stock. The leadership of the work has been assigned to H. A. Edson and Miss Venus W. Pool, who will be assisted by M. B. McKay and H. G. MacMillan. Supplementary experiments will be conducted on the same type of soil at Waupaca, Wis., in cooperation with the Wisconsin Experiment Station, to determine the relation between the diseases occurring in Wisconsin and in the Greeley area. R. D. Rands, of the Wisconsin station, will be the assistant at this point.

NEMATODE DISEASES.

Active work will be in progress to discover further means of controlling nematode diseases of truck crops, particularly the root-knot disease caused by *Heterodera radicola*. The field work on this problem will be conducted principally at Florence, S. C., in cooperation with the South Carolina Experiment Station. L. P. Byars will have charge of these investigations.

THE PRINTING FUND.

By a recent memorandum the attention of members of the department has been called to a number of legislative provisions which affect the work of the department although they are not contained in the agricultural appropriation act. Among these is the appropriation of \$500,000 for printing and binding for the department, which is expended under the supervision of the Division of Publications. This fund includes a sum limited to \$47,000 for the Weather Bureau and another sum limited to \$137,500 for Farmers' Bulletins. Four-fifths of these Farmers' Bulletins are placed at the disposal of Senators, Representatives, and Delegates in Congress, to be sent out as they may direct. The \$500,000 must also defray the expense of the Secretary's report.

It is also provided that no more than one-half of this printing fund may be spent in the first half of the fiscal year and that no more than one-fourth of it in either of the remaining quarters. The law furthermore expressly states that copy for any annual report must be in the hands of the Public Printer on or before the 15th of November, and that any documents which are to accompany the report must be in his hands a month earlier.

PLANT QUARANTINES.

(Contribution from Federal Horticultural Board.)

The pink boll worm of cotton is one of the most serious pests of cotton known. It occurs in practically all cotton-producing countries of the world except the United States and it is, therefore, very important to exclude it from this country. It may gain entrance both through cottoused and in the seed that is always present in baled cotton lint. The entry of cotton seed from foreign countries is already prohibited by quarantine on account of this pest. During the last year the department has conducted a series of hearings on the subject of regulating the entry and utilization of cotton lint to prevent the entry of this pest by this means. Probably 150,000 bales of lint cotton are imported each year, chiefly Egyptian cottons, and each of these bales may contain several hundred cotton seed. Living larvae of this insect have been found in such seed. The introduction of this pest into Egypt, where it has already become the principal enemy of cotton, is believed by the Egyptian Government to have been from seed contained in imported cotton lint.

The official public hearing on the subject of regulating the entry of foreign cottons was held at this department May 15, 1914. Supplemental conferences have been held at various times since that date. As a result of these conferences rules and regulations governing the importation and movement of foreign cotton were drafted, and these were submitted to a general conference called for April 20, 1915. This conference was attended by representative cotton merchants and manufacturers, all of whom expressed a hearty desire to cooperate with this department in its effort to prevent the entry of the pink boll worm into the United States.

The regulations become effective July 1, and provide for the entry of foreign cotton under permit, and it is expected ultimately to require the fumigation of such cotton at port of entry as a condition of further movement and utilization in the United States. The regulations also provide for the licensing of cotton mills, so that certain control measures can be required of such mills as a condition of licensing. The movement of imported cotton will thereafter be limited to licensed mills.

Similar action will be taken in relation to Hawaiian cotton by means of a domestic quarantine, the pink boll worm having already become established in the Hawaiian Islands.

As indicated, the portion of the regulations as originally drafted providing for fumigation of cotton at port of entry, has been omitted. In the meantime, however, it is proposed to carry on extensive experimen-

tation with fumigation to determine both the efficiency of the treatment as a means of killing the pink boll worm larvae contained in the cotton seed in the lint, and also to determine whether such treatment can be made without in any way injuring the lint. This experiment, on a large scale, is now under way in cooperation with cotton merchants and cotton manufacturers. A committee of such merchants and manufacturers will supply some 60 bales of Egyptian and other foreign cottons for experimental purposes and the fumigation of these bales will be conducted in Washington. After fumigation the bales will be submitted to various mills for spinning and milling tests in comparison with cotton bales of similar grade and standard which have not been submitted to treatment. A very careful examination of treated cotton will also be made by department experts of the Bureau of Plant Industry and the Bureau of Chemistry, and also by experts of the Bureau of Standards.

The process recommended is fumigation with hydrocyanic-acid gas in a practically complete vacuum. Such fumigation can be given to 60 or more bales of cotton at one time in apparatus now available, or apparatus can be constructed which can fumigate in that way a freight car loaded with cotton.

The Federal Horticultural Board is co-operating with the Bureau of Entomology in an investigation of the pink boll worm in Hawaii, particularly to determine the life history and different food plants of this pest. A knowledge of the food plants is particularly important inasmuch as the insect is known to feed on other plants somewhat related to cotton, and several such plants are common weeds in New England, so that the danger of the establishment of the insect is not limited necessarily to the cotton fields of the South.

Proposed Chestnut Quarantine.

On account of the discontinuance of the Federal effort to control the chestnut bark disease after July 1, 1915, it seems desirable to provide for such prevention of spread as may be possible by domestic quarantine, and notice of public hearing has been issued for May 18, 1915, to consider the advisability of prohibiting further shipment of chestnut nursery stock and chestnut lumber retaining the natural bark from the States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and West Virginia, and portions of the States of Ohio, North Carolina, Iowa, and Nebraska, to points outside of these States.

One of the problems in connection with the chestnut bark disease is the protection of chestnut orchards. Excepting western Michigan and a portion of Illinois, the greater

part of the coastal plain of the Southern States, including Florida, and the northern half of Maine, the native chestnut grows in practically all of the territory east of the Mississippi. The eventual disappearance from this area of the native chestnut and of chestnut orchards, except some strains of Japanese varieties resistant to the chestnut bark disease, will increase the demand for the growing of the chestnut for nuts in orchards outside of the present infected area, although this development is now in its infancy.

While within two years after the death of the tree the timber of chestnut trees killed by this fungus is as valuable as sound chestnut timber, deterioration sets in after that time. It is especially important, therefore, that the rapid spread of the disease be checked even if it should prove to be impossible to prevent its spread more effectually.

Annual Revision of Moth Lines.

In spite of all control measures the gipsy moth and the brown-tail moth insects are slowly extending their range each year and the quarantined territory, therefore, is revised annually to cover the new territory. In the case of the brown-tail moth the spread of this insect during the last 12 months is included in the quarantine lines as established last year. Hence, this year there will be no extension as to this insect. In the case of the gipsy moth there has been a slight extension of the territory covered in all of the New England States. This extension includes some of the border towns just beyond the old quarantine lines.

Revision of Potato Inspection.

A new policy in relation to potato inspection under the quarantines covering Maine and portions of New York became effective April 16, 1915. Under the new plan the inspection of potatoes by Federal officers at points of origin prior to shipment was discontinued and full responsibility for the condition of the potatoes offered for interstate shipment as to freedom from disease was placed upon the shipper. To determine compliance with this requirement, the potatoes leaving the quarantined area will be given a preliminary inspection at one or more designated inspection points en route. Portland is the principal preliminary inspection point for Maine, and Alburgh, Vt., for Clinton and Franklin, the two quarantined counties of the State of New York. Such potatoes will be given final and thorough inspection at points of destination as they are being unloaded from the cars.

The underlying principle of the new plan is to make it very much to the interest of the growers and shippers to see that none but properly sorted potatoes are offered for inter-

state movement. A failure on the part of such shipper to assume this responsibility and meet the conditions of interstate shipments will be penalized by the holding up and racking of potatoes at the preliminary inspection point, and, if necessary, also at destination, involving a very considerable delay and expense. There will be no occasion for any such delay or cost if the shipper takes reasonable care to see that his potatoes are properly sorted before offering them for shipment. If such delay and cost, therefore, is experienced by any shipper the fault will be his own and within his own power to remedy. There seems to be every reason to believe that this new plan of enforcement of the quarantine will work out much more efficiently than the previous plan, which left the shipper always with the temptation to get his bad potatoes by the local inspector if possible. Under the new system shipping out bad potatoes has its subsequent penalties of costs and delays, which act as the strongest kind of incentive to do good work. In general the potato shippers of Maine are thoroughly familiar with potatoes and are better inspectors than any force which it is possible for the Department of Agriculture to employ. The plan, therefore, is to make use of this superior inspection force without salary or cost to the Government. The new plan, with its provisional and terminal inspection, will probably be carried out at less than one-half the cost of the former plan, involving inspection prior to shipment.

Plants Covered by Quarantine.

The following is a list of the plants, plant products, etc., now under quarantine, in accordance with the various notices of quarantine issued up to April 20, 1915:

Irish potatoes from Newfoundland, the islands of St. Pierre and Miquelon, England, Scotland, Wales, Ireland, and Continental Europe, except Denmark and part of the Netherlands. The quarantine is still in force against the Provinces of Drenthe and Groningen in the Netherlands. There are no restrictions on the entry of foreign potatoes into the island of Porto Rico.

Irish potatoes from the States of Maine and New York, except under rules and regulations prescribed.

Cotton seed (including seed cotton) of all species and varieties and cottonseed hulls from all foreign localities and countries except the States of Nuevo Leon, Tamaulipas, Coahuila, Durango, Chihuahua, and Lower California, in Mexico. Cotton seed (including seed cotton) of all species and varieties from the States mentioned may be used for manufacturing purposes only, under regulations. No restriction is placed on the use of cottonseed hulls imported from said States, or which may be obtained from cotton seed imported from said States.

Cotton seed and cottonseed hulls from Hawaii.

Seeds of the avocado or alligator pear from Mexico and the countries of Central America.

Oranges, sweet limes, mangoes, *Achras* sapotes, peaches, guavas, plums, and grapefruit, and their horticultural varieties from Mexico.

All citrus nursery stock, including buds, scions, and seeds, from all foreign localities and countries. The term "citrus" as used here includes all plants belonging to the subfamily or tribe *Citrateæ*.

Any fruit or vegetable from Hawaii upon which the Mediterranean fruit fly or the melon fly breeds, or which, from proximity of growth or the requirements of packing and shipping, may carry infestation, including alligator pears, bananas, carambolas, Chinese ink berries, Chinese oranges, Chinese plums, coffee berries, cucumbers, damson plums, eugenias, figs, grapes, grapefruit, green peppers, guavas, kamani nuts, kumquats, limes, loquats, mangoes, mock oranges, mountain apples, melons, Natal or Kafir plums, oranges, papayas, peaches, persimmons, pineapples, prickly pears, rose apples, star apples, string beans, squashes, and tomatoes, except that bananas and pineapples may be moved from the Territory of Hawaii in manner or method or under conditions prescribed in the regulations of the Secretary of Agriculture.

Living canes of sugar cane, or cuttings or parts thereof, from all foreign countries, and from Hawaii and Porto Rico. There are no restrictions on the entry of such material into Hawaii and Porto Rico.

Indian corn from Java and India and Oceania except Australia and New Zealand.

All *five-leaved* pines from Europe and Asia. (Note: On and after July 1, 1915, *all pines* from all European countries and localities will be excluded.)

Date palms, or date-palm offshoots, from Riverside County, Cal., east of the San Bernardino meridian; Imperial County, Cal.; Yuma, Maricopa, and Pinal Counties, Ariz.; and Webb County, Tex., shall be moved only in accordance with the rules and regulations applicable thereto.

Coniferous trees, such as spruce, fir, hemlock, pine, juniper (cedar), and arbor vitae (white cedar), known and described as "Christmas trees," and parts thereof, and decorative plants, of the area quarantined for the gypsy moth (certain parts of New England), such as holly and laurel, known and described as "Christmas greens or greenery," shall not be moved or allowed to move interstate to points outside the quarantined area. (Note: It is proposed to allow the movement of these articles on and after Aug. 1, 1915, under regulation.)

Forest plant products, including logs, tan bark, posts, poles, railroad ties, cordwood, and lumber, and field-grown florists' stock, trees, shrubs, vines, cuttings, and other plants and plant products for planting or

propagation, of the area quarantined for the gypsy moth (certain parts of New England); excepting fruit pits, seeds of fruit and ornamental trees and shrubs, field, vegetable, and flower seeds, bedding plants, and other herbaceous plants and roots, shall not be moved or allowed to move interstate to any point outside the quarantined area unless and until such plants and plant products have been inspected by the United States Department of Agriculture and pronounced free from the gypsy moth.

Deciduous trees or shrubs of the area quarantined for the brown-tail moth (certain parts of New England and Long Island), or such parts thereof as bear leaves, including all deciduous field-grown florists' stock, vines, cuttings, grafts, and scions, but excepting forest plant products, such as logs, tan bark, posts, poles, railroad ties, cordwood, and lumber, shall not be moved or allowed to move interstate to points outside the quarantined area unless and until such plants and plant products have been inspected by the United States Department of Agriculture and pronounced to be free from the brown-tail moth. Coniferous trees and other evergreen trees are not affected by the brown-tail moth regulations.

INTERNATIONAL BOOKKEEPING.

(Contribution from the Bureau of Crop Estimates.)

Tables showing the exports and imports of each principal farm product from and to practically all countries are printed annually in the Yearbook of the Department of Agriculture. These tables show the international trade in these products and the methods by which the records of world exports and imports are kept by commercial countries really constitutes a system of international bookkeeping. While the system is far from perfect, some of the exports of one country in a given fiscal year showing up as imports of one or more countries in the succeeding fiscal year, it is interesting to note how nearly the total exports from all countries agree with the total imports of all countries for the same year or series of years. These figures are obtained annually from the official trade returns of 200 or 300 different countries. Occasionally a principal item will not be reported separately in the statistics of imports or exports for a given country, or the product in question may not be clearly described. There are many other conditions which tend to prevent the total exports of a given product from all countries from being exactly the same as the total imports of a given product into all countries for a given year. However when total exports of a product for a series of years is compared with the total imports the figures are in close agreement. In only a few cases do the totals differ as much as 10 per cent, when three or more years are taken. Most of the variations are much smaller. An average of 21 products for 1911-1913 shows exports to be only 0.8 of 1 per cent above imports.

COOPERATION IN ESTIMATES.

(Contribution from the Bureau of Crop Estimates.)

The Bureau of Crop Estimates, with its field organization and office equipment, has facilities for collecting and summarizing agricultural data which many other branches of the department do not possess. In each State it has a trained field agent who specializes on crop and live-stock production in the State, who travels throughout the State monthly during the crop season, and who has a corps of correspondents at strategic points to keep him advised as to conditions in their localities. In nearly every county and township in the United States the bureau has a voluntary crop reporter who reports monthly or oftener on crop conditions in his neighborhood. Additional lists are also maintained of individual farmers, ginners, mills, and elevators, stockmen, dealers, and others, who report on special crops, prices, and crop movement. Altogether there are approximately 145,000 of these voluntary crop reporters, about 50,000 of whose names are borne on stencil lists. In the Washington office the Division of Crop Reports has a large force of expert tabulators and computers who can tabulate and summarize the results of any inquiry with the utmost dispatch and accuracy. The Division of Crop Records has a force of statistical scientists and clerical assistants who maintain records of trade reports, State reports, and crop and live-stock reports of the United States and foreign countries. The branch of the library kept in the bureau probably contains the most complete collection of publications on agricultural statistics of this or any other country.

COOPERATIVE INVESTIGATIONS.

When the work and organization of the bureau were under consideration by a special committee appointed by the Secretary in 1913, the committee recommended, among other things, that the facilities of the bureau for collecting and working up agricultural data be made available to other branches of the department so far as practicable without interfering with its regular work, bearing in mind always that it would be unwise to ask the voluntary crop reporters so many questions as to discourage them. In accordance with this policy the Bureau of Crop Estimates has conducted many special inquiries for other bureaus during the past year, such as relate to stocks of cabbages and onions on hand, for the Office of Markets; the business of loaning money to farmers, for the Rural Organization Service; wool growing, sheep raising, and prices paid for milk, for the Bureau of Animal Industry; the lumber industry, for the Forest Service; and miscellaneous inquiries, for the Office of the Secretary, for the committee appointed to investigate the meat situation, for the Bureau

of Entomology, for the Office of Farm Management, and other branches of the department. The bureau is in a position through its field force to estimate in every State the crops and varieties of crops grown, areas planted and when, whether conditions are favorable or unfavorable, causes and extent of crop damage, time and methods of harvesting, quantities harvested and prices, percentage of crop harvested monthly, and such other information with respect to the business of farming as can be supplied by farmers in every community who are accustomed to keeping records or noting conditions in their neighborhoods. Where it can be done without interfering with the regular crop estimates and without overburdening the voluntary crop reporters the bureau is willing at all times to cooperate with any other branches of the department in conducting special inquiries at their request.

ASSISTANCE FROM BUREAUS.

On the other hand, various bureaus of the department have rendered valuable assistance to the Bureau of Crop Estimates by giving expert advice with respect to special inquiries and in the interpretation of the results of such inquiries. The Division of Publications and the Bureau of Plant Industry have cooperated in maintaining the list of voluntary crop reporters by supplying them with such publications and seeds as were available for distribution. The Office of Information, by means of the Weekly News Letter, has brought directly to the voluntary crop reporters the practical results of the department's investigations. The Weather Bureau, especially, has given prompt and wide publicity in each State to the preliminary crop estimates. Within the past six months the forest rangers supplied information concerning live stock in the forest reserves, and the county demonstration agents of the Office of Farmers' Cooperative Demonstration Work supplied information relative to fall sown oats and wheat in the South.

Various bureaus can render further assistance by checking the accuracy of the estimates published by this bureau, by suggesting new lines of inquiry, and by keeping the bureau advised as to special lists of correspondents established by them which might be utilized occasionally to advantage by the Bureau of Crop Estimates. Members of the field forces of the different bureaus can cooperate by reporting to the bureau or to the State field agent special phases of crop or live-stock production which come under their immediate observation, by suggesting the names of well-informed farmers who might be willing to serve in that capacity, and by giving publicity to the methods of making crop estimates and their value to farmers, as outlined in the revised Circular No. 17, "Government

Crop Reports: Their Value, Scope, and Preparation," with a view to removing the wide spread impression among farmers that crop reports are of value only to speculators.

IMPORTANCE OF DATA.

It is believed that every employee of the department should know something of the statistical data of crop and live stock production, especially as relates to his own special line of work or investigation. With respect to many phases of agriculture census statistics are entirely lacking and the best obtainable substitutes are estimates based upon comprehensive inquiries and carefully prepared summaries by an organized force of employees trained in statistical methods. The estimates prepared by the Bureau of Crop Estimates should, therefore, be of value to all branches of the department as an index of current agricultural conditions throughout the country and as an indication of progress and permanent improvement resulting from the research and extension work of the department. It is also conceivable that a careful study of crop estimates, as showing the trend of production and prices of a particular crop or group of crops for a series of years, might indicate clearly certain phases of agriculture which need strengthening and upon which the organization and facilities of certain branches of the department might be concentrated to advantage. Improvement of the crop reporting service is the constant aim of the Bureau of Crop Estimates and to this end suggestions, constructive criticisms, and cooperation of other bureaus are invited. It is also the desire of the bureau to place its field force and its office facilities at the disposal of any other branch of the department in need of them.

Statistical Matter in Crop Estimates.

The Bureau of Crop Estimates, in addition to the material on which the crop reports and publications of that bureau are based, maintains a library and elaborate files of statistical records referring to all phases of agriculture. This reference collection of records is not for circulation but is available in the bureau to anyone who cares to make use of it. The librarian in charge will be glad to cooperate with those seeking information in special statistical files.

The bureau also from time to time has prepared special data in answer to requests for information. These letters, which are carefully filed and indexed, frequently enable the bureau to supply exact answers to many unusual questions covering peculiar crops or production in special areas.

The following selected list of records available in that bureau is suggestive of the wide range of statistical information which it keeps on file:

Area, production, and farm price of principal crops, 1866-1915, by States.

Number and farm price of live stock on farms, January 1, 1867-1915, by States.

Average monthly prices paid to producers for various farm products, 1908-1915, by States.

Monthly condition, during growing season, of principal crops, 1866-1915, by States.

Average wages of farm labor, for series of years, by States.

Agricultural statistics and estimates for foreign countries.

Exports and imports of agricultural products for foreign countries.

Agricultural estimates made by State authorities.

Unofficial (private) agricultural estimates.

Copies of letters and tabular statements giving specially-prepared information relating to crop estimates. (Indexed.)

Prices of principal cereals at large markets on or about the first of each month, 1909-1915.

Prices of fruits at Kansas City; highest and lowest price monthly for a series of years up to 1912.

Prices of fruits and vegetables at New York City; highest and lowest monthly for a series of years up to 1912.

Number of live stock received at principal markets monthly for a series of years to January, 1915, inclusive.

Monthly lowest and highest prices of various farm products at St. Louis, Milwaukee, Minneapolis, Duluth, Baltimore, Chicago, and Cincinnati; and of rosin at Savannah.

Prices of canned tomatoes at Baltimore, New York, and Chicago, January, 1911, to June, 1914, inclusive.

Same for canned peas.

Monthly lowest and highest prices of flour at four cities, 1902-1911.

Prices at principal cities on first of month for live stock, potatoes, sweet potatoes, butter, eggs, and poultry.

Monthly receipts at principal cities of cereals, live stock, etc.

Investigators are invited to make use of these records, and facilities are always provided for such work. It will be necessary, however, to consult records where they are filed, since they are not to be taken from the bureau.

The farmers' exchange list is ready for the press for the coming month. This list will be about three times the size of the one put out last month. The only objection to the monthly exchange list is the cost of printing and sending out. I have just arranged with the three newspapers of the county a scheme to eliminate the cost of printing entirely. Each will publish it in the paper and send a copy to all the farmers on my list. They will take turns in printing the list. (From Oregon county agent.)

CHEMISTRY PROJECTS.

(Contributions from the Bureau of Chemistry.)

The Bureau of Chemistry has completed at Arlington farm, Va., an experimental potato-drying plant, for the purpose of determining the commercial possibilities for the potato-drying industry in this country.

The immediate object of the experiment is to determine the most effective and economical method of drying potatoes for stock feed. It is believed that culls and potatoes for which no profitable market is found can be turned into a concentrated nonperishable product that can be shipped profitably long distances from potato-growing sections to stock-feeding regions. The product as developed in the first runs consists of most of the starch and solids of the potato dried with the potato skin. It is known to be an excellent food for swine and is believed to be suitable as a cattle food.

The plant at Arlington consists of a concrete building 100 feet long and 40 feet wide, two stories high. The potatoes when delivered are dumped into a potato washing machine which removes all straw, stones, and foreign matter and thoroughly cleanses the potatoes. From the washer the potatoes go by elevator into a grinder in which they are beaten into a fine semiliquid pulp. The pulp is run through a roller press which removes a great deal of the water. The pressed pulp is then put through a textile drier, which removes nearly all of the moisture. It is not desirable, it was found, to dry the pulp completely, as it immediately reabsorbs moisture from the air.

The product when delivered at the end of the drier is in flakes irregular in shape, somewhat larger than a silver dollar. The flakes are slightly darkened by the minute particles of peeling mixed in with the solid content of the potato. The product when eaten raw has the characteristic potato flavor with a slightly bitter or puckery flavor, characteristic of the skins of boiled potatoes.

Part of the potato starch is removed in the process of rolling. Experiments are to be made in collecting and saving this starch as a by-product.

This process differs materially from the process which has been used in Germany. It is desired to work out a method that can be carried out with a smaller investment than is required for the German plant.

Improvement of Oysters.

(Contribution from the Bureau of Chemistry.)

Sanitary surveys have been made of the oyster beds from Virginia to Massachusetts through the cooperative efforts of the Bureau of Chemistry and the Public Health Service. These surveys, made mainly on Government laboratory boats, consisted in taking oysters from the beds and making

careful bacteriological examinations of them which would accurately determine whether or not the waters in which the oysters were growing were contaminated in any way by sewage or other dangerous elements. In many cases a chemical examination is also made of the water. Similar investigations have been made by the State officials of Rhode Island, New York, Maryland, New Jersey, and Virginia. All the oyster beds in the States mentioned have been so charted that when certain beds are closed, owing to pollution or other causes, it is easy to establish from these maps the definite area covered by these beds.

As a result of the examinations, the Federal departments are assisting the State and local authorities in closing the polluted oyster sections, so that the polluted oysters will not reach the market. Only recently the State Conservation Commission of New York accepted the report of the Bureau of Chemistry with regard to the sanitary condition of the oyster localities within the State of New York, and issued their permits to oystermen for the catching of oysters according to the conditions shown by the bureau's report. In the sections where pollution was found no permits were issued. The Hygienic Laboratory of the Public Health Service has just finished a similar piece of work in the waters of Virginia, and as a result the State of Virginia has instructed its inspector not to permit the catching of oysters from the polluted areas. An encouraging feature of this work is that the oystermen themselves are seeing to it that no oysters from the prohibited sources enter the local markets or are shipped inland.

Many typhoid epidemics have been supposedly caused by oysters, but several such cases that were carefully investigated during last season could not be traced to oysters. Recently an epidemic of typhoid in New York State was reported as having been caused by polluted oysters, but upon investigation it was found that it was due to a typhoid carrier working in the kitchen of a hospital.

The whole outlook of the oyster situation is encouraging. There is no doubt but that as a result of the work of the Federal and State officials and the cooperation of the oystermen, there are better oysters from a sanitary standpoint on the market to-day than ever before. The oyster can be considered equally as pure as the majority of milk or water supplied in towns and cities.

The direction and emphasis of the national thought is changing, and we are witnessing the marshaling of many forces in the struggle for greater prosperity and for better conditions of living in the rural districts. We are witnessing a great increase in the expenditure of money to foster agriculture through all sorts of scientific and practical measures on the part both of the States and of the Nation.—[Annual Report, 1914.]

FOOD AND DRUG LAWS.

(Contribution from Bureau of Chemistry.)

Every State in the Union, with one exception, has a food and drug law which defines what constitutes misbranding and adulteration of articles of foods and drugs. Contrary to general opinion, these State laws and the Federal law, known as the Food and Drugs Act of June 30, 1906, are almost verbatim copies of each other with respect to misbranding and adulteration. There is less uniformity in the rules and regulations established for the enforcement of these laws and in the definitions and standards of food and drug products as adopted by the several administrative officials than there is in the laws themselves, due to different interpretations by those enforcing them and to the difference in local conditions throughout the country.

For the purpose of securing as much uniformity and harmony as possible between the States themselves and between the States and the United States Department of Agriculture, in all matters pertaining to the enforcement of such laws, the United States Department of Agriculture has created in the Bureau of Chemistry, the office of State cooperative food and drug control. It is the duty of the chemist in charge of this office to keep in personal touch with both State and Federal food and drug officials, learning the work they are carrying on or are planning to develop, and keeping each advised of what the other is accomplishing throughout the country. This office therefore is a clearing house for all new and important information pertaining to the administration of food and drug laws.

The United States Department of Agriculture, the Association of American Dairy, Food and Drug Officials, and the Association of Official Agricultural Chemists have created a Joint Committee on Definitions and Standards, consisting of three officials of the United States Department of Agriculture and three officials of each of these two associations, to determine what are proper definitions and standards of food and drug products. This committee has recommended a definition and standard of condensed milk which has been formally adopted by the Secretary of Agriculture as a guide for the officials for the Department of Agriculture in enforcing the Food and Drugs Act. This has been approved by some twenty-odd State food and drug commissioners who have been heard from upon the subject. All important questions involving definitions and standards arising in the enforcement of both State and Federal food and drug laws are now brought to the attention of this committee. This committee is, therefore, a most important factor in promoting uniformity and harmony

as well as efficiency in the enforcement of such laws.

Another most important policy established for promoting cooperation and uniformity is the interchanging of investigational information, scientific data, and methods of analysis obtained by State and Federal officials. The Bureau of Chemistry is collating all its information of this nature and sending it to State officials who in turn are collating and exchanging what they have upon the same subjects to be added to these manuals. This information contributes not only to uniformity in methods of analysis, but to uniformity in the interpretation of the results of analysis, which is, in a large measure, the basis of opinion as to the legality of the product under consideration. This gives to every State and Federal official the benefit of the information which every other official has secured through investigational work. This will prevent any wasted effort to solve problems which have already been solved.

Cooperation, however, is not complete until all officials are taking an active part in the establishment of policies and standards of procedure. The field men have their problems to solve. The inspector can not be and is not overlooked. An effort therefore is being made to establish some uniformity in one of the most important matters pertaining to the administration of food and drug laws, viz., factory inspection. The problem of the standardization of factory inspection work in a way that factory inspection reports may be of real value for administrative purposes is under consideration. Nothing has contributed more to uniformity in dairy inspections than the so-called "dairy score card" developed by the Official Dairy Instruction Association, which is composed of officials of the State agricultural colleges and the United States Department of Agriculture. This card has been adopted by 185 cities, 27 State bodies, 49 schools and colleges, and 13 commercial organizations. The standardization of inspection of other food-producing plants is possible and desirable. It is important to select the best features of the methods already in use by the United States Department of Agriculture and the State departments, and to give each official the advantage of the other official's method and system.

Public Hearing on Macaroni and Spaghetti.

A public hearing will be held in Washington, on May 14, by the Bureau of Chemistry to discuss definitions and standards for macaroni, spaghetti, noodles, and similar alimentary pastes for the guidance of Federal and State officials in the enforcement of food and drug laws. The discussion will

include the kind of wheat from which the products may be made, what limitation shall be placed on moisture content and its relation, if any, to the statement of weight, the prohibition of artificial coloring matter, and other matters pertaining to the subject. The hearing will be held at 10 a. m. May 14, in room 427, 1359 B Street SW.

To Discuss Flour Standards.

A public hearing to discuss definitions and standards for various kinds of flour will be held by the joint committee on definitions and standards in St. Paul, Minn., May 24, 1915. This joint committee is composed of representatives of the Association of American Dairy, Food, and Drug Officials, the Association of Official Agricultural Chemists, and the United States Department of Agriculture.

This hearing is held for the benefit of those interested who were unable to present their views at the first hearing on this subject held in Chicago on May 3, 1915. Dr. E. F. Ladd will represent the committee at the hearing, the purpose of which is to obtain from those concerned reliable information on the characteristics of flour and meal. This information is to be used in drawing up definitions and standards for grain, meal, flour, straight flour, patent flour, graham flour, rye flour, and buckwheat flour, under the food and drugs act. The hearing will be held at 10 o'clock in the morning of May 24, 1915, in the St. Paul food and drug inspection laboratory of the United States Department of Agriculture, which is located in the Old Capitol Building, St. Paul, Minn.

Hearing on Java Coffee.

A public hearing on the labeling of East Indian coffees will be held by the Bureau of Chemistry, at 10 o'clock on June 4, in Room 427 of 1358 B Street SW., Washington, D. C. The particular point to be discussed is the use of the term "Java." Food Inspection Decision 82 holds that under the Food and Drugs Act the term "Java" can be properly applied only to coffee grown on the island of Java. Representatives of the trade, however, assert that coffee grown on the island of Sumatra is superior to much of that produced in Java, and that since the public has long considered the word "Java" to mean any high-grade coffee from the East Indies it is perfectly proper to apply it to the Sumatra product also. All persons interested in this question are invited to attend the hearing.

FOOT-AND-MOUTH DISEASE.

(Contribution from the Bureau of Animal Industry.)

The spread of the foot-and-mouth disease appears to have been checked and the few cases now reported from time to time are sporadic outbreaks in territory that has previously been infected.

The disease was discovered in Niles, Mich., in October, 1914. How it found its way there is not known as yet. The previous outbreaks in 1902 and 1908 were both traced to the use of vaccine which had been contaminated with the infection. Legislation following these epidemics, however, was believed to be sufficient to guard against any recurrence of this cause.

Once the disease had found its way to Michigan its spread was hastened by the feeding of contaminated skimmed milk to hogs in the vicinity. Milk from an infected herd was sent to a creamery and the skimmed milk mixed with that from other herds and returned to the farmers to be fed their hogs. The result was that a large number of hogs became infected at once and one herd passing through the Chicago Stock Yards is thought to have infected the pens there. Other shipments of live stock picked up the disease as they passed through the yards and carried it to widely separated points. Fortunately, however, none of these shipments went to the South, and the few that went to the far West were traced in time for the animals to be killed before very serious harm was done. Had the disease once become established on the open range, its eradication would have been almost impossible.

The discovery of the disease in Michigan was followed on October 19 by the first of a long series of interstate Federal quarantines. As has already been said, however, this action did not prevent the infection of the Chicago yards. In consequence it became necessary to trace every recent shipment of live stock from these yards and to quarantine all the places into which the animals had gone. This, with subsequent cases of secondary infection, has led to the quarantining in whole or in part of 21 States. The earlier quarantines, declared when the extent of the contagion was still uncertain, were based on State boundaries and prevented the shipment in interstate commerce from the quarantined areas of cattle, swine, sheep, and other ruminants, and prohibited also shipments of such animals into the infected States for any purpose save that of immediate slaughter. Later, with the cooperation of the various State authorities, it became possible to release portions of the affected States from these restrictions, and the quarantines were based on county instead of State lines.

MODIFICATION OF REGULATIONS.

The purpose of these quarantines was, of course, to bring the movement of suspected stock to a standstill and to enable the inspectors to locate all actually infected animals. As soon as this was done the herds in which disease existed were slaughtered and buried. Half of their appraised value was paid to the owners by the State and half by the Federal Government. These measures checked the spread of the disease, and before the end of 1914 the situation appeared to be so well in hand that it was possible to modify the quarantine regulations. By an order which became effective January 1, 1915, the quarantine area was divided into three classes:

(a) The closed area. Into and out of this territory all movements of live stock are absolutely prohibited.

(b) The exposed area. From this territory the movement of animals is permitted for immediate slaughter after Federal inspection and certification. Animals can be moved in for any purpose.

(c) Modified area. In this territory the provisions are much the same as in the exposed area, but the preliminary inspection of stock being shipped out for immediate slaughter is not required.

Shortly after the adoption of this plan, shipments from the free portions of infected states picked up the infection in transit and were found to be spreading the disease. As an additional precaution, therefore, to safeguard the South and the West which had hitherto been practically free from the disease, the whole of the country, with one or two minor exceptions, east of the Mississippi and north of the Tennessee-North Carolina line, was included in the quarantined area and those portions of it not already included in the other classifications was made restricted area. From this restricted area no live stock shipments were permitted to points outside of the quarantined territory. Otherwise, the movement of live stock was not interfered with. Since that time these precautions have proved sufficient to protect the South and West from the disease, and so much progress has been made in the eradication of the plague elsewhere that there is every reason to hope that the districts as yet uninfected will escape entirely.

For the first time since the appearance of the disease there were on April 1 no animals known to have the contagion in the country. This was regarded as a most encouraging evidence of progress even though two cases were reported from Illinois the following morning. Such sporadic outbreaks are necessarily to be expected, for the germ unquestionably survives for a considerable period of time in hay, straw, manure, etc., or even on the ground itself, and while destruction of infected materials and disinfection are resorted to, the difficulties in the way of complete work can not always

be overcome. The disease is extraordinarily contagious and may be spread in any number of ways. Chickens, cats and dogs, though not susceptible themselves, may act as mechanical carriers. Human beings unquestionably do so very frequently. In fact, curiosity on the part of farmers to see stricken animals has been one of the factors in spreading the pestilence.

COOPERATION IMPORTANT.

This curiosity is a part of the general lack of knowledge of the disease for which the comparative immunity from the plague which America has hitherto enjoyed is responsible. In some States, notably Illinois, this ignorance has taken the form of opposing the regulatory measures of the Government on the ground that they were unduly severe and irksome. In one Illinois county farmers actually succeeded in obtaining a temporary injunction preventing the authorities from slaughtering the diseased animals. This injunction was soon dissolved, but the delay resulted in a great increase in the plague in the neighborhood. As a matter of fact, the whole State suffered severely from this attitude. Altogether 58,877 animals have been infected in Illinois, or more than twice as many as in any other of the States, Pennsylvania being next with 23,327. These figures show the necessity for prompt and vigorous action, a fact which was ultimately realized by even the most determined opponents of the policy of slaughtering the exposed herds. In consequence, farmers, State and Federal authorities, are now cooperating everywhere; the regulations are being observed with a thoroughness which is only possible when the people themselves are in sympathy with them; and it is hardly too much to say that the end of the long campaign appears to be in sight.

What this means to the country is indicated by the fact that in 1911 in Germany there were over 7½ millions of animals affected with the disease, and that there is approximately three or four times as much live stock in this country as in Germany. There the disease has gained such a foothold that to resort to the policy of slaughter is economically impossible, and the Government is practically powerless. Because the mortality is comparatively low, the seriousness of the disease from an economic standpoint is not thoroughly recognized. An animal, though apparently completely recovered, may suffer a relapse and, as in the case of so-called typhoid carriers, may also continue for months to be a source of danger to all other stock. In those countries which have had unpleasant experiences with the disease, notably in Great Britain, desperate efforts have been made to keep out the plague. Great Britain has succeeded in stamping it out by the slaughter method on all recent invasions, but on the Continent it is chronic in many countries.

CATTLE TICK CAMPAIGN.

(Contribution from the Bureau of Animal Industry.)

Under provisions of the act of Congress approved June 30, 1906, \$82,500 was appropriated to enable the Secretary of Agriculture to undertake experimental work in cooperation with State authorities in eradicating the ticks transmitting southern cattle fever. The matter was immediately taken up with the States affected, and active work was started late in July of that year. The territory infested by the ticks included all or portions of the States of California, Texas, Oklahoma, Missouri, Arkansas, Louisiana, Kentucky, Tennessee, Alabama, Mississippi, Georgia, Florida, North Carolina, South Carolina, and Virginia.

The work of 1906 was largely of a constructive nature, much propaganda work being necessary among individual farmers in order to insure active cooperation; nevertheless 29,315 herds, consisting of 548,844 cattle, were examined in that year. While for the most part State authorities were interested and willing to aid in the work, there was a dearth of State laws and funds with which to enable them to render active assistance to the Federal inspectors. The more active work, therefore, dates from 1907, and much has been accomplished since that time. Further and larger appropriations have been made by Congress from year to year.

The work is now divided into districts of one or two States, and is under the direct personal supervision of a Federal inspector in charge in each district. All employees engaged in tick eradication, both Federal and State, report directly to him, and are under his direction. These inspectors in charge in turn report to, and are directed by, the Chief of the Bureau of Animal Industry at Washington, D. C.

Since the beginning of the work tick eradication has been completed in the States of Missouri, Tennessee, and Kentucky, nearly completed in California and Virginia, and is well under headway in most of the remaining States except Florida, which but recently has shown an inclination to cooperate. Out of a total infected area of 729,024 square miles, ticks have been eradicated from 253,288 square miles, leaving still under quarantine an area of 475,806 square miles. These figures by no means, however, represent the entire amount of work accomplished. In the greater part of the area still remaining under quarantine propaganda and constructive work has been done to a greater or less extent, public interest has been aroused, better quarantine laws have resulted, and many obstacles have been overcome.

About 4,000,000 cattle previously below the quarantine line are now in tick-free territory. It is impossible to estimate ac-

curately the financial benefit thus gained. The improvement in weight and condition, the ability of the owners to introduce new breeding blood, etc., have been of immense advantage. Of the 4,000,000, one-quarter are estimated to be dairy cattle. The increase in milk and butter from these animals is said to range from \$5 to \$15 a head yearly. The income thus gained already represents twice the amount that has so far been expended.

Expenditures in the work of tick eradication up to January 1, 1915, are as follows: Department of Agriculture, \$1,815,360; States and counties, \$1,436,266; making a total sum of \$3,251,625.

Since the beginning of the work in 1906 many obstacles have been overcome. The methods now used have been largely developed as the work progressed and men have become expert in the work. Lack of knowledge and prejudice of many cattle holders, absence of proper State laws, a misunderstanding and lack of knowledge of the proper use of parasiticides—these are some of the things that have been, and are still being, overcome. Failure to convict violators of quarantine laws and to control cattle on free range is still standing to some extent in the way of progress.

One of the greatest difficulties at the present time is the trouble arising from the use of free-range territory. In Texas many counties have voted against tick eradication, but as the work has progressed and the advantages of the work become better known, public opinion in those sections is rapidly changing. One county in Texas, which a year ago voted by a substantial majority against tick eradication, this year carried the project by a vote of three to one.

READING LISTS IN BULLETINS.

The heads of the various bureaus and offices have been requested by the Assistant Secretary to instruct the authors of bulletins to submit with each manuscript a brief list of publications already issued by the department on subjects allied to that of the new manuscript. This list is intended to serve as a basis for a list of titles to be printed on the back cover of the forthcoming bulletin and to serve in this way as a guide to the public to the sources of additional information. The tentative list submitted by the author of the bulletin is to be revised by the index section of the Division of Publications, and the titles of bulletins which are distributed free are to be separated from those for which there is a small charge. A committee has been appointed to work out the details of this plan, which it is hoped will do much to increase the public's knowledge of the available Government literature on various agricultural topics.

DIVERSIFICATION IN SOUTH.

During the planting season, which is the most important period of the present year for southern farmers and business men, the department is vigorously prosecuting its campaign for self-supporting agriculture throughout the cotton belt. Farmers and business men are urged to help in encouraging a diversified farming which will enable the South to feed its own people, although of course retain the cotton as the big cash crop. For years the department, in common with others who know the weaknesses and dangers of the customary southern agricultural practices, has worked to influence the South to change from the system of farming for cotton production only to "food for its people, feed for its live stock, and cotton."

Beginning shortly after the outbreak of the war in Europe a strong effort was made to increase the fall sowing of wheat and oats. This resulted in more than doubling the fall seeding of oats, and increased by one-third the fall seeding of wheat. The increased acreage in oats was 1,903,000 acres and in wheat 1,812,000 acres.

During last fall the winter legumes, such as bur clover, crimson clover, and hairy vetch, were also seeded on an increased acreage throughout the Southeastern and Gulf States.

In the department's program it is pointing out to the farmers and business men of the South the probability that a large amount of cotton will have to be carried over out of the present crop as a reason for exercising caution in cotton planting. With this uncertainty, the production of the living on the farm is the most important thing. While a reduction of the cotton acreage seems desirable and practicable, whether it is reduced or not, the South ought to undertake to produce at least enough foodstuffs both for human beings and for live stock to make itself self-sustaining.

This program is not advocated as a temporary makeshift, or merely for the purpose of cutting down the cotton acreage, but as a permanent and lasting system which ought to be adopted to avoid financial and agricultural uncertainty in the South. Further than this, all the county agents and other workers from the department are pointing out the necessity of some system of marketing the different farm products and are urging the business men to assist the farmers. To this end an important conference was recently held in South Carolina at which representatives of each of the agricultural colleges in seven of the Southeastern States were present to confer with department officials and with extension workers in dairying and beef cattle raising for each of the States in question relative to a program for increasing the interest of farmers in dairying and beef cattle raising.

CATTLE WORK IN SOUTH.

(Contribution from Bureau of Animal Industry.)

The work with beef cattle which the Bureau of Animal Industry is conducting in the South covers experimental or investigational work, and also extension service. Various phases of the beef-cattle industry, such as the cost of raising cattle to different ages, methods of wintering the different classes of cattle, methods of finishing for market during both winter and summer, and the feeding value of various feed stuffs are being handled. Experimental work is now being conducted in Mississippi, North Carolina, and West Virginia, in cooperation with the State agricultural colleges. The first work of this kind was started with the Alabama Experiment Station in 1904 and continued in that State until 1914, when it was transferred to the Mississippi Agricultural College. During the first three years of experiments testing various feeds for finishing cattle for market, 10 lots of steers were worked with each year. It was clearly demonstrated that no large profits were to be made from finishing in the dry lot during the winter when both feeds and cattle had to be purchased and the cattle sold in the quarantine pens at the market. Some other method of finishing cattle will have to be adopted.

ABERDEEN-ANGUS IN ALABAMA.

During the same time experimental study was made of the cost of raising beef cattle under farm conditions. A herd of Aberdeen-Angus cattle in northern Alabama were used in this work and careful records kept of each animal during the entire time. All animals were weighed every three months. Under farm conditions, when feeds were charged at farm prices, it was found to cost \$4.96 to \$5.25 per hundred pounds to produce cattle of 12 to 33 months of age when no account was taken of the manure. If this was valued at \$1.25 per ton, the cost of raising the cattle was from \$2.28 to \$2.35 per hundred pounds.

From 1907 to 1914 several hundred cattle were used in experiments in western Alabama in studying the cost of raising cattle, the efficiency of various rations for winter cattle, the relative economy of making steers live during winter months in the old stalk fields and on open range without additional feed as against feeding them through the winter. The effects of the methods of wintering upon the daily gains made the following summer while on pasture, and also the relative profits of winter and summer pastures on steers, as well as the effects of shelter versus no shelter for fattening animals, were bases of experiments. The profitableness of fattening beef calves for the market was also studied. Several bulletins have been issued giving the results of this work.

TICK-FREE SECTION OF MISSISSIPPI.

Experimental work last year was transferred from Alabama to the tick-free section of Mississippi, where it is now in progress in the brown-loam section of Canton and in the prairie section of the State near Abbott. The steers in the first winter's experiments at Canton were marketed on April 7, 1915, and brought the highest price for southern cattle on the St. Louis market for the week. This summer experiments will be conducted on the economy of fattening cattle on grass alone versus fattening on grass with supplemental grain rations. The Department of Agriculture, in cooperation with State experiment stations, has already conducted several years' work along these lines. Experimental work was taken up in the fall of 1913 in the mountainous sections of North Carolina in the feeding of beef cattle, in cooperation with the State experiment station.

FEEDING CATTLE ON NONTILLABLE PASTURE.

The finishing of cattle during the winter and the summer are being studied and methods of wintering cattle also investigated. This work is particularly important to western North Carolina, as a relatively small amount of land can be used for cultivation as the country is mountainous and does not produce an abundance of feed for wintering cattle. The department is trying to determine if suitable pasture can not be made for wintering cattle upon land which can not be tilled. It is also making comparisons on wintering under such conditions prevalent in this part of the country as against wintering in the feed lots upon silage and other farm-grown feeds. Correlated to this work is the study of the method of wintering upon the subsequent gains made by the cattle during the summer. The past two winters a bunch of young steers have been wintered upon a pasture of orchard grass, blue grass, and clover, having no shelter except trees, etc., and no loss in weight was recorded. The grass had been cut for hay during the summer and then permitted to grow up for winter pasture. When the pasture was charged against the steers at \$1 per head per month, the cost of wintering was about half that of wintering similar steers in a dry lot with shelter.

IN THE APPALACHIAN DISTRICT.

A complete study of methods of producing and finishing beef cattle in the Appalachian region will be undertaken in the experimental work in West Virginia in cooperation with the State Agricultural College. Last year in that State a survey was made of those counties most interested in beef cattle work to determine the status of the industry. Last fall some experiments were begun to determine the most economical and practical

method of carrying yearling steers through the winter.

Bulletins reporting the progress of the experimental work mentioned above will be issued from time to time by both the Bureau of Animal Industry and the State agricultural college concerned.

BEEF CATTLE EXTENSION WORK.

The department's extension work with beef cattle in the South is divided into two classes. The first covers the feeding demonstration work being done with the cattlemen of the Panhandle section of Texas. The second class is the demonstration work in the Texas tick-free area. The latter work was made possible through the appropriation by Congress and the authorization of live stock demonstration work in areas freed from ticks. This work is also in progress in the Carolinas, Tennessee, Georgia, and Arkansas, and will soon be taken up in Mississippi, and perhaps in Oklahoma. All live stock extension work is carried on in cooperation with the county demonstration agents.

In other States of the South the extension work takes the form of organization of county live-stock associations; aiding in keeping the associations alive after they are formed; getting each county association to adopt one breed of beef cattle as a standard for the county if possible; getting the banks to loan money at a low rate of interest and for a satisfactory length of time for purchasing live stock through the county associations; aiding in locating and selecting such breeding stock; encouraging community ownership of bulls; planning suitable rations for farmers who feed some cattle for market, such cattle to be marketed in a cooperative manner; and giving all other possible aid along live stock lines.

As soon as the foot-and-mouth situation becomes more favorable there will be many carloads of pure-bred beef bulls purchased for use in the various Southern States which have the county association work under way. A number of county associations have been formed in each of the above-named States and the work is being pushed rapidly.

SKELETON MAPS.

The Division of Publications has the following maps which will be found convenient for those wishing to make graphic showing of production or the location of activities.

Outline maps of United States showing counties. Rand, McNally & Co.'s size.

Outline maps of States showing counties. Rand, McNally & Co.'s size.

Outline maps of States showing counties. Letter-sheet size.

In requesting these maps the same form as that used to request publications should be used.

DIVERSIFICATION AND BANKER.

The following are extracts taken from an address on diversified agriculture and the relation of the banker to the farmer delivered by Mr. Bradford Knapp at the bankers' convention in New Orleans, April 16, 1915:

There can be but three attitudes toward the individual or toward the masses of the people—first, a sympathetic understanding of the individual or the masses and a kindly and constructive effort to relieve the condition and assist in the solution of the problem; second, total indifference; and, third, the attitude of the wolf, the cynic, the plunderer, who looks only upon the individual or upon the masses of individuals as possible objects of legitimate prey.

Agriculture is the great primary business or pursuit of the human race. Without it the world would perish. Were nature to lock up her stores and refuse to produce, or the farmers of the world refuse to work for a single year, anarchy and chaos exceeding all powers of imagination would follow. And yet there are cities and city people who regard the surrounding agricultural territory as a mere waste of land which supports the city, which ministers to the wants of the city, and which is entitled to no return of service from the city or business enterprises within it.

Does the store exist as a primary business, asking as a right, a contribution from all other individuals and lines of business, or is it a part of a broad system of distribution made necessary by our complex civilization and rendering a service to the inhabitants of the locality for which it expects a reasonable compensation? Is the bank a primary business, or is it an institution created because of our complex civilization, having certain well-known functions and rendering certain service to the population, for which services it is permitted to charge a reasonable compensation?

CITY AND COUNTRY.

Upon the attitude of mind of the person, whether individual or in groups, will depend our point of view on the questions I am going to discuss. If the city is the all important thing, and the country and its agriculture are simply tolerated because we are made with stomachs and we have to eat, then the city is going to regard the country and the country men as legitimate prey. There are cities to-day whose business systems are draining the very life blood of the country surrounding them without making the slightest constructive contribution toward the solution of any of the vexing problems confronting the country and its people. It is one thing for the city and its business to prosper and live in affluence by seeing just how much it can drain out of the country and out of the agriculture which surrounds it, but it is another thing for the city to prosper because it has reached forth a helping hand to serve the country and make it prosper with the city. The first is an unstable, unsatisfactory and selfish condition. The second is a permanent, a safe, an enlightened, and a highly satisfactory condition for civilized people to live in. You have paved streets, elegant business buildings, marble counters, heating plants, hot and cold water, bath rooms, electric lights, gas, sewage disposal, fine schools, parks, lawns, amusements. But beyond the border of your city what is there? Have you ever inquired? Are there poor schools, bad roads, slough-

grass, poverty, miserable homes, long hours of toil and little compensation? Oh, but you say, there are great undeveloped resources around about every city, and I answer you, yes, there are, but why are they undeveloped? What contribution, what constructive effort has been put forth by the city and town, by the merchant, the banker, and the business man to help place the agriculture of the country upon a safe, sound, and prosperous basis.

SAFE BANKING AND SAFE FARMING.

I have injected these few remarks for the sole purpose of causing you to think about the responsibility the men and the business undertakings of the city owe to the country and the solution of the country's problems. What kind of agriculture have you in the country surrounding your city or your town, a prosperous agriculture, or is it unprosperous, and why? If it is not prosperous, what is the matter? Is the trouble with the land, with the climate, with the kind of agriculture pursued, or is the trouble with the whole economic system? I think you will agree with me in saying that the best agriculture is the agriculture that is the most profitable, considering duration and permanency as one of the factors of profit. And by profitable, I mean profitable to the farmer. If the agriculture of a district is unprofitable or precarious, something is wrong. When you, or the bank, are making an investment or a loan, the principal and all-important question that troubles your mind is, will it pay; is the return of the money absolutely certain and sure; is it safe? Should not this be the criterion for engaging in the farming business? Are you asking the farmers of your community to pursue an unsafe system of farming while you desire to pursue an absolutely safe banking business? But I might go further and ask, "Are you contributing to the making of that business of farming unsafe?"

Where agriculture is the best and the returns from the labor of the husbandman are the surest, we have the greatest agricultural prosperity and the lowest rates of interest, and yet I venture to say, if you will inspect the statistics, you will find the banks of those countries prosperous in the extreme. Go to the great agricultural section of the Northwest, where the development of farming has been the highest and best in the country, and you will find the rates of interest lowest, the farmers the most prosperous, and the banking business safe and secure. This means only that where the system of agriculture is the best we have certainty of results, low rates of interest, profitable agriculture, and sure banking. And, conversely, where these things are not true we have uncertain results, high rates of interest, unprofitable agriculture, and insecure banking.

THE ONE-CROP SYSTEM.

I do not intend to take up your time to-day to discuss as fully as I would like this very deep question of the one-crop system as contrasted with diversified agriculture. There are certain definite principles in this business we know as farming or agriculture which lead to the conclusion that the only safe and permanent system of agriculture must be founded upon a reasonable diversification. No matter how magnificent the one crop may be as a cash proposition that kind of a system has elements of weakness which make it unsafe. So far as the Southern States are concerned, let us confess that there are no crops greater and more alluring than the four

original cash crops of the South—cotton, tobacco, sugar, and rice. No agriculture, however, has long endured upon the one-crop system, and when we compare the South with other countries we must marvel that our one-crop system has carried us as far as it has.

Did you ever think of the condition of the cotton farmer of the South, of the dilemma he was facing? The only way in the world you can improve a one-crop system is to produce more of that one crop, and when you do that the markets of the world are glutted, the price drops, and your effort to improve brings its own disaster. On the other hand, as your fertility decreased or as unfavorable weather conditions cut off the production of the crop and the price rises, you may have little to sell, and again you are in distress. Facing either way you please you are in a dilemma, for your agriculture is founded upon the shifting sands of one-crop system and not the rock foundation of a self-supporting agriculture.

Cotton is the basis because the farmers know how to produce it. If they do not know how to care for live stock and grow other crops, it is partly because they can not get credit on them because they don't know how to farm that way. Periodical failures of the cotton crop or failures of the cotton market have brought unavoidable mishaps which have caused loss and suffering, not only to the farmers, but to all of the bankers, merchants, and business men of the South.

THE KEY TO THE SITUATION.

And so I have come to you to-day to say that in your hands you have the power, in my judgment, to institute a safe, sound, self-supporting agriculture in the South if you will do it. The key to the whole situation lies in the hands of the bankers and credit merchants of the South. * * * Can you blame the farmer, especially the little or tenant farmer, if he does not follow the advice of agriculturists and does not diversify when he well knows that when he goes to the small banker or supply merchant of the South the basis of his credit is fixed on the number of acres of the one cash crop that he is going to produce.

But, you will say, there is not a market for other crops, and that is true—there is none. The reason why the markets are not in existence is simply because the system is against them. It is so easy, where the traveling salesman drops in, for the merchant to give his order through the usual channel of trade for the Northern-grown product. There is no constant supply and no standard of production or marketing of locally-grown produce. Hence we must foster such markets and fix standards before we can get the new system permanently on its feet. I want to tell you now, there is nothing more important, nothing more helpful you can do, than to help the Southern farmer find reasonable market for locally-grown produce other than the one cash crop of the community. It is not so difficult but it requires action. In Texas quite a number of counties have established diversification and marketing associations. I know of a southern city where merchants have formed a produce association and have employed two men to go out and help farmers in marketing. Farmers who are out of debt and are doing profitable farming are the best asset of any community. Other cities, counties, or districts can do these things if they will. There is one thing I wish to point out, and that is, that you can never expect to have a permanent and a profitable system of agriculture as long as

the system of credit takes away from the farmer producer the maximum of profit and transfers it to some one else. No business in the world will stand the profits that some of the Southern farmers have to pay for goods advanced to them. I am not saying this to criticize the merchants of the South. This is simply a cold statement of facts. But I am saying it to emphasize the fact that some one must lay constructive hold upon this problem, change the system of credit and enable the farms to produce this stuff themselves and reap a fair share of the reward for their labor. We need to get more on a cash basis, and quit farming to pay last year's debt. Another source of difficulty is that credit is not based on a productive purpose. A good many men have been studying rural credit in Europe during the past few years, but the rural credit of Europe is not used for the purpose of enabling men to support the family while the farmer makes a crop. The purpose of credit of the South is mainly to support the family while the farmer makes the crop, storing up a debt he must pay out of the crop. The farmers of Europe have rebelled against such an uneconomic program, and prior to the present war in Europe an economic revolution took place which in 60 years time established a new and almost independent system of rural finance.

You, the earnest, intelligent, and thinking bankers of the State have the influence with merchants, and I hope you have the influence with the little banker back at home, through the loans you make—you have the power to set new standards of credit. If you will take hold of this problem with the intention of lifting it, you can establish a self-supporting agriculture in the State of Louisiana, but without your assistance and the assistance of those who control channels of trade and credit in the State, it will be a superhuman task to create a self-sustaining system of farming. Diversification and a profitable agriculture will come only when the bankers and merchants diversify.

TREATISE ON FORECASTING.

Forecast officials of the Weather Bureau have been collaborating for some months past in the preparation of a treatise on weather forecasting.

The purpose of the work is to reduce to writing the precepts and rules that have been developed empirically by officials having long experience in forecasting. Through their unification and in some instances their amplification it is designed to make the final compilation available for the use of bureau officials, especially those who have not yet reached the grade of district forecaster.

The text of the treatise is practically completed, but the exact time of its issue can not yet be announced.

LODGEPOLE PINE.

Bulletin 154 describes the manner of growth and the yield of lodgepole pine, an important national forest timber which figures largely in Government sales. This bulletin will be followed by another, now in press, discussing the utilization and proper management of lodgepole.

WEATHER NOTES.

(Contribution from the Weather Bureau.)

On April 14 the Weather Bureau began the issue of weather forecasts for the entire United States for a week in advance, distinct forecasts being made for each of the nine large areas into which the country was separated for that purpose.

On the following week the plan of telegraphing these forecasts to certain designated distributing centers in five of the larger areas, comprising the main crop-growing regions of the country, was put into operation. At these centers the weekly forecasts are printed immediately upon receipt, and are then sent by mail to the various rural newspapers that can receive them in time for publication in their weekly issues. In special cases the forecasts are telegraphed to the newspaper at its expense.

A detailed account of the plan of distribution, together with the names of the districts and distributing centers, and the proper procedure on the part of newspaper publishers desiring to receive the forecasts, has already appeared in the Weekly News Letter of the Department.

Weather Crop Services.

The Special Work of the Weather Bureau in the great corn and wheat, cotton, sugar and rice, and cattle regions, through the issue of daily bulletins of temperature and rainfall, was resumed in April—the corn and wheat service on April 1, and the cotton, sugar and rice, and cattle services on April 16.

No important changes have been made in the character of the work in those districts, except in the cattle region, where reports from additional stations have been provided for, thereby greatly extending the area covered.

Weather and Crop Bulletin.

The first issue of the National Weather and Crop Bulletin as a weekly publication for the current growing season appeared on April 14.

Several changes were effected in the form and make-up of the bulletin in order to provide additional space for special features that have been added. The most important of these is the publication of weekly forecasts for the nine distinctive areas into which the country has been divided for that purpose. Each forecast is for the week beginning with the day on which the bulletin is issued.

The day of issue also has been changed from Tuesday to Wednesday to admit of a better collection of the information on which the bulletin is based, as well as to secure a wider distribution of the information through the agency of the rural press.

The publication of the diagrams showing the weather conditions by weeks in the prin-

cipal crop-growing districts and the condition of the more important crops in those districts will be resumed as soon as the crop-condition reports of the Bureau of Crop Estimates become available.

Spring Frosts and Fruit.

A Weather Bureau official has recently been detailed from the Portland (Oreg.) station to oversee the distribution of frost warnings in the Rogue River Valley for the protection of deciduous fruits from injury by spring frosts. The frost warnings are issued from the Portland district forecast center and disseminated throughout the fruit-growing regions by telegraph and telephone. The system of protection in that region covers the fruit districts of Boise and Lewiston, Idaho, and the Rogue River and Yakima Valleys in Washington and Oregon.

Similar work of protection is carried on in the fruit districts of Utah and Colorado.

Storm-Warning on Lakes.

With the opening of the current season of navigation on the Great Lakes the display of storm and small-craft warnings was resumed on April 16, and the Weather Bureau office at Detroit, Mich., was made a center, or clearing house, for weather and storm information affecting those waters.

In the performance of the additional duties assigned him in this connection, the Weather Bureau official in charge at Detroit will act in the capacity of marine agent for the Great Lakes and as an intermediary between the district forecaster at Washington, D. C., and the representatives of lake marine interests. He will also have supervision over changes and modifications in the system of lantern displays, now under consideration, for improving this means of disseminating storm-warning information.

Storm-Warning Lanterns.

The probability of a change in the method of displaying storm-warning signals on the Great Lakes has made desirable more definite information regarding the visibility of signals, particularly regarding the minimum angle at which two lights may be distinctly seen.

Experiments conducted by the Instrument Division of the Weather Bureau on the Potomac River below Washington show that storm-warning lanterns equipped with two electric lamps, in order to be distinguished from each other with the naked eye, must be 4.4 feet apart for each mile of distance from which they are viewed. In the case of the same lanterns equipped with one electric lamp each the separation need be but 3.7 feet to the mile. The use of binoculars makes possible a separation of only 1.8 feet to the mile.

Ocular tests for brilliancy of illumination show that an enormous increase in the intensity of the storm-warning lights may be obtained by the use of the 100-watt and 200-watt newer type gas-filled Tungsten lamps with condensed filament, using one lamp for each Fresnel lens. Modern methods of electric-lamp construction have developed a lamp which permits the concentration of the light in the focus of the lens. One lamp only should be used for each Fresnel lens, and it should be placed exactly in the optical center of the lens.

An extension of the test to oil-burning lamps is planned for the near future.

Atlantic Ocean Observations.

During the summer of 1914 the Government Revenue-Cutter Service initiated the Ice-Patrol Service over the North Atlantic coast, in cooperation with various scientific bureaus and agencies of the United States Government. At that time the conduct of the meteorological work thus carried on was in charge of representatives from the Bureau of Standards of the Department of Commerce.

Arrangements have been made to resume this service this year, beginning May 1, under the newly organized Coast Guard of the Treasury Department through the agency of the cutter *Seneca*, which is equipped with scientific instruments for the study of meteorological conditions, ocean hydrography, and biological work in respect to marine life.

The meteorological work performed last year by the Bureau of Standards is now recognized as belonging properly to the Weather Bureau, and during the coming cruise of the *Seneca* this bureau will have a representative on board charged with securing observations of meteorological phenomena over the ocean, especially in connection with fog formation, wind currents, and conditions prevailing in the upper atmosphere overlying the water areas traversed by the vessel off the North Atlantic coast. These observations will be of especial value owing to the fact that the course of travel is the one over which the main steamer traffic between the United States and Europe is carried on. In addition to the meteorological observations made on the cutter by the Weather Bureau official detailed for that purpose, he will conduct a series of kite flights whereby a record can be obtained of conditions in the upper air. The period of observations will continue throughout the entire cruise of the *Seneca*, which probably will extend over several months.

Seismological Observations.

By authority of Congress the Weather Bureau has recently resumed its work in seismology.

A Marvin vertical pendulum seismograph is now in operation at Washington, D. C., and two Bosch-Omori horizontal pendulum seismographs are operated at Northfield, Vt. The records obtained by these instruments are measured and analyzed. Data recorded by the instruments of about 25 cooperating earthquake stations in North America are also collected by the bureau, as are also non-instrumental reports of earthquakes from all Weather Bureau stations and from over 4,000 cooperative observers, more or less uniformly distributed throughout the United States. All the information thus obtained is arranged for publication in the Monthly Weather Review.

Monthly Weather Review.

Among the papers and reports of scientific interest to be published as supplements to the Monthly Weather Review may be mentioned the following:

A record of the time of leafing, blooming and fruiting of numerous native and cultivated plants growing in the vicinity of Wauseon, Ohio, has long been kept by Mr. Thomas Mikesell. Mr. Mikesell's observations extend from 1872 to 1912, and not the least valuable feature of his memoir will be the simultaneous meteorological records which he adds to those of a phenological nature.

Under the same cover as the above is to appear a calendar of the common trees of the eastern United States, prepared by Mr. George Lamò, of the Forest Service. This calendar, with its graphical tables, presents at a glance the average vegetative stage of almost any kind of tree at any month in the year. This should prove most interesting to the general public, as well as to the student of climate and plant life.

A useful compilation and charting of the distribution of thunderstorms over the United States, in both time and place, has been completed by Mr. William H. Alexander, of the Weather Bureau. The facts will be presented graphically in 12 charts. A quantity of statistics on thunderstorms will also be published in the form of extensive tables.

The large amount of information concerning evaporation from lakes and reservoirs in the United States gathered by Prof. F. H. Bigelow in 1907-1910, is now being compiled in detail. This valuable observational material, fundamental to the problems of evaporation, will appear as soon as it can be properly assembled and printed. As at present planned the prospective publication will contain available illustrations showing the conditions under which the observations were taken, but no attempt will be made to chart the results or to analyze them in detail.

CREDIT TO EMPLOYEES FOR PAPERS.

In determining the efficiency ratings of scientific employees in the Weather Bureau,

publications and technical work are given consideration in fixing their relative standing on the scientific register prepared by that bureau. In order that proper recognition may be accorded employees who submit papers for publication or other disposition, a committee was appointed by the Chief of the Weather Bureau in April of the present year to pass upon such articles, whether prepared for publication by the Weather Bureau or intended to be published elsewhere.

Such papers will be given careful and impartial consideration by the committee as regards general merit and qualifications. In each case the committee will prepare a brief statement giving an estimate of the value of the paper under consideration, and the statement will be filed with the efficiency records of the author and receive due consideration with respect to his eligibility for promotion. This practice will be followed irrespective of whether or not the paper is finally published.

Atlas of Meteorology.

In cooperation with other bureaus of the department the Weather Bureau has undertaken the preparation of an extensive atlas of crop and weather information.

The portion assigned to this bureau will embrace extensive charts and diagrams of temperature, precipitation, state of the sky, occurrence of drought, frequency and intensity of rainfall, amount and distribution of snowfall, occurrence of frost, and information regarding wind, humidity, and evaporation. In addition to the principal charts showing the mean values for the several months and for the year as a whole, the means for certain combinations of months constituting important seasons, and various other detailed information showing the climatic characteristics for different sections of the country will be given. The entire number of charts and diagrams to be furnished by the Weather Bureau will probably exceed 100. It is contemplated issuing first a preliminary or so-called school atlas, to be made up of a limited number of the more easily prepared charts. The complete atlas will doubtless not be ready for a year or more.

The preparation of the material involving a large amount of work will put to excellent service the extensive weather data collected by the bureau during the last 40 years. Much will be from the records furnished by the large and efficient corps of cooperative observers, who have so faithfully recorded the weather day by day that it is now possible to furnish definite and full information regarding nearly every phase of the weather in any portion of the entire country.

POPULAR ABSTRACTS.

The brief and popular abstracts which appear below are published with the object of bringing to the attention of all who may be interested (1) publications of the department which because of limited edition or special circulation do not reach the entire personnel, and (2) papers by members of the department which are published in outside scientific or technical journals which may therefore escape the notice of some members of the department who might make use of the material. In each case the abstracts are contributions from the bureau indicated in the subheadings.

BUREAU OF PLANT INDUSTRY.

A bulletin by W. F. Wight on Native American Species of *Prunus* (No. 179) will be interesting to horticulturists, especially those who are studying varieties and doing work in plant breeding. The study embraces only those species of the genus *Prunus* of interest principally from the standpoint of their fruit production or their utilization as stocks in the propagation of other species. The distribution, variation, and adaptability, early history and botanical descriptions, horticultural history and development, synopsis and key to the species, and descriptions of the species and hybrids are given. Seventy-six references to literature cited are appended.

SUGAR BEETS.

Bulletin 199, by Harry B. Shaw, entitled "Loss of Tonnage of Sugar Beets by Drying," discusses the losses incurred by allowing sugar beets to lie in the field. While the data apply specifically to conditions in the Western States they are equally applicable to regions having relatively higher humidity. An appreciable loss of weight occurs through the evaporation of water content of sugar beets during storage. The loss in dollars and cents does not necessarily correspond to that in weight as with vegetables, because beets owe their value chiefly to sucrose. The sucrose does not pass off with water, but studies (especially in Germany and France) have shown that sugar, while in the beet, is by no means a stable compound. Inversion and decomposition take place. Experiments were made by the writer in pulling and drying sugar beets, the effect of drying upon the sugar content of beets, and the drying of beets in very large open piles, and tabulated results are given, showing that the shrinkage was lowest when the beets were in covered piles. The author also discusses the relation of shrinkage to money loss.

PEANUT GROWING.

A special leaflet on peanut growing in the cotton belt, by H. C. Thompson, will

be suggestive to farmers in the cotton belt desirous of diversifying their farming to meet the economic crisis adversely affecting the cotton crop. The commercial value of the peanut crop has increased greatly in the past 15 years. The market demand is growing rapidly, and the production of peanuts for stock food offers at present the greatest opportunity for increasing acreage. The peanut is one of the best hog foods, is also valuable for cattle, horses, and mules, and the growing of peanuts improves poor soil. Instructions are given for the preparation of soil, fertilizers, and manures, the planting, cultivation, and harvesting of peanuts.

BARLEY.

The greatest demand upon the barley crop is for the purpose of malting. In order to ascertain the possibility of improvement of the barley grain for this purpose an extensive study of the embryology and morphology of the barley grain has been carried on in the Bureau and the results reported by Albert Mann and H. B. Harlan in a professional paper (Bul. 183—Morphology of the Barley Grain with Reference to its Enzym-secreting Areas). This paper will interest agronomists, brewery chemists, and maltsters.

MUSHROOMS.

Bulletin No. 175, Mushrooms and Other Common Fungi, by Mrs. F. W. Patterson and Miss Vera K. Charles, will assist amateur collectors of mushrooms to recognize many edible species and to avoid certain poisonous ones. No new species have been described, but especial consideration has been given to those of frequent occurrence and wide distribution, a few having been selected from each of the most familiar genera. Brief descriptions are given of the following families, including keys to the genera and occasionally to the species discussed: Agaricaceæ, Polyporaceæ, Hydnaceæ, Tremellaceæ, Clavariaceæ, Phallaceæ, Lycoperdaceæ, Sclerodermaceæ, Nidulariaceæ, and Ascomycetes. Technical terms have been avoided as far as possible, and those used are explained in the appended glossary. A large number of the species described are illustrated. The bulletin also includes a list of poisonous or suspected mushrooms, several pages of recipes for cooking mushrooms, and a list of reference books useful to the amateur.

From the Journal of Research.

An article entitled "Phoma Destructiva, the Cause of a Fruit Rot of the Tomato," by Miss Clara O. Jamieson, appears in the April number of the Journal. *Phoma destructiva* was proved, as a result of inoculation experiments, to be an active wound parasite upon green and ripe tomato fruit. It also causes leaf spotting of tomato and potato plants. The disease, which is serious

under favorable climatic conditions, is probably widely distributed, though information concerning the distribution has thus far been obtained only through specimens from Cutler, Fla., in 1912; Punta Gorda, Fla.; Cuba; Florence, S. C.; Miamisville, N. Y.; and Herrington, Kans., in 1914.

The paper is illustrated with two colored and six uncolored plates, and eight references to literature cited are appended.

APPLE BITTER-ROT.

The sources of the early infections of apple bitter-rot are discussed in an article by John W. Roberts in the April number of the Journal. This disease will often break out without warning, affecting every apple in the orchard in an incredibly short time, the suddenness and extent of the infection indicating that practically all spots are caused by spores washed down from the primary sources of infection. These sources of infection therefore become of great importance in the control of this disease. They have been found by the writer to be not only the mummied apples and bitter-rot cankers of the preceding year, in which the fungus winters over, but also in other cankers (caused by *Nummularia discreta*, *Bacillus amylovorus* and *Phyllosticta solitaria*) and in dead or injured parts of the tree.

The paper is illustrated by a plate and six references to literature cited are appended.

RHIZINA INFLATA.

The peculiar fungus, *Rhizina inflata*, which occurs frequently on the ground in the forest-free areas of the Northwest, has attracted little attention from forest pathologists, as it was considered to be saprophytic. The close proximity of the fruiting bodies to dead coniferous seedlings, however, aroused suspicions that it caused the death of the seedlings. James R. Weir in some "Observations on *Rhizina inflata*," in the April number of the Journal, reports that experiments, though not conducted under control conditions, furnish proof of the parasitism of the fungus. He gives a plate and four references to literature.

CITRUS CANCER.

It has been discovered that citrus canker, which has proven so destructive in the Gulf States, is of bacterial origin. The organism causing it is described in a preliminary report in the April number of the Journal as *Pseudomonas citri*, by Miss Clara H. Hasse. Her report is made at this time in the hope that the announcement of the bacterial cause of the disease will lead to a more adequate understanding of the precautions essential to an effective campaign for its eradication.

Journal of Research Reprints.

A classified mailing list for the distribution of reprints of articles contributed by the Bureau of Plant Industry to the Journal

of Agricultural Research is maintained in the Bureau of Plant Industry. Any member of the force desiring to receive these reprints regularly should send his name to the Bureau Librarian, indicating the subjects in which he is interested.

The Journal is distributed only to libraries and institutions, but the reprints are distributed freely to individuals. It does not seem to be clearly understood, however, that application for reprints should be made to the bureau which contributes the article.

The professional papers in the department series, contributed by the Bureau of Plant Industry, are also distributed to this classified list. The general bulletins—not professional papers—are sent to a more popular list.

THE FOREST SERVICE.

Since January 1 the following department bulletins, contributed by the Forest Service, have been issued for the public: Bulletin 145, "Tests of Wood Preservatives," by H. P. Weiss and C. H. Teesdale; Bulletin 152, "The Eastern Hemlock," by E. H. Frothingham; Bulletin 153, "Forest Planting in the Eastern United States," by C. R. Tillotson; Bulletin 154, "Life History of Lodgepole Pine in the Rocky Mountains," by D. T. Mason; Bulletin 210, "Seed Production of Western White Pine," by Raphael Zon.

WOOD PRESERVATIVES.

Bulletin 145 gives the results of tests on a number of compounds and chemicals submitted to the Forest Products Laboratory, at Madison, Wis., for determination of their practical value as wood preservatives. Such tests are part of the work which the Forest Service is carrying on, through its laboratory conducted in cooperation with the University of Wisconsin, to promote a more thorough and economical utilization of forest products, and a consequent lessening of the drain upon the forests of the country.

EASTERN HEMLOCK.

Bulletin 152 discussed the forest life, rate of growth, manner of utilization, and best method of management of eastern hemlock for lumber and pulpwood production. The bulletin is designed particularly for private owners of hemlock stumpage who want to manage and utilize their holdings to the best advantage, and for States which might raise the tree on public reserves of land unsuited for ordinary agricultural crops.

MANUALS OF INSTRUCTION.

Besides these bulletins the Forest Service has issued, for the use of its own men, a manual of instructions for the scaling and measurement of national forest timbers as a means of standardizing the practice in Government timber sales. This manual follows another, issued last November, which gives

instructions for the appraisal of national forest timber. The appraisal establishes the upset price which the Government sets in advertising bodies of stumpage for sale under competitive bids, while the scaling and measurement establishes the quantity of material actually cut and to be paid for by purchasers. Since the total national forest cut of timber under sales last year exceeded 600,000,000 board feet and yielded the Government in receipts over \$1,250,000, the instructions governing the methods to be followed in securing for the Government the actual worth of the large amount of timber are of fundamental importance.

FOREST PLANTATIONS.

Bulletin 153 discusses for one of the country's main agricultural regions the establishment and care of forest plantations, and the best species to plant, particularly with a view to supplying the farmer with needed fuel and timber, while at the same time providing a suitable crop for low-grade or waste land on the farm.

THE 1914 YEARBOOK.

The Yearbook of the Department of Agriculture for the calendar year 1914 will be issued during the month of May, which is somewhat earlier than usual. This is the twenty-first volume of the Yearbook. In accordance with the law, it contains the report of the Secretary for the fiscal year ended June 30, 1914, and there are in addition 31 articles by various officials and employees of the department—the whole making a volume of 677 pages exclusive of the index, with 53 full-page half-tone illustrations and 45 line drawings in the text.

The articles in the Yearbook all treat of problems connected in some way with the agricultural activities of this country, but many of them are of interest to the urban population as well as to farmers themselves. Some of the more unusual subjects treated are "Cooperative marketing and financing of market associations"; "Nematodes," which are somewhat unfamiliar to the average reader; "Edible snails," suggesting the possibility of introducing a novelty into American fare; and an article based upon the thousands of letters received in reply to a request from the Secretary for suggestions from farm women in regard to the department's work.

In accordance with the law, an edition of 500,000 copies will be printed of the Yearbook, but of this number only 30,000 are assigned to the Department of Agriculture for distribution among its voluntary observers, crop correspondents, and those rendering the department some service. On the other hand, 470,000 copies are reserved for distribution by Senators, Representatives, and Delegates, and Resident Commissioners in Congress. Department employees will be supplied with the Yearbook only upon orders

of chiefs of bureaus, divisions, and offices from the allotments to such bureaus. Persons not connected with the department who desire copies of the Yearbook should apply direct to one of the Congressmen who represent their State or district.

FOREST NOTES.

(Contribution from the Forest Service.)

The recreational use of national forests was discussed at a conference of national park superintendents held by the Interior Department at Berkeley, Cal., in a paper by the Forester on the subject "National Forests and National Parks." The following is a brief summary of this paper:

In the national forests, the recreation problem, is not confined to certain large areas of extraordinary and spectacular scenic character, which may some time be considered as desirable for national parks, but it is one that concerns thousands of points throughout the forests; a problem that is being handled with forethought and in a constructive way, just as are handled the development and use of other resources like timber, forage, water, and land. * * *

In the administration of the national forests it is a cardinal principle that each class of land should be put to its highest use and render its greatest service by use. In some cases certain areas are either suitable for a single use only or susceptible of proper protection and development only when devoted exclusively to one purpose. Ordinarily, however, with a certain measure of restriction here and there the different resources can be developed side by side. The forage is used for grazing, but it is made secondary to timber production and is not allowed to be so handled as to injure the forest. In some places the protection of the water resources and prevention of erosion and slides is the most important matter. In such places cutting of timber is not carried on. In some places grazing is prohibited on city watersheds to insure the prevention of erosion and the safeguarding of the purity of the water. In some cases the grass is held for the use of the elk and other game. And finally the protection of scenic roads, lake shores, and other points of special esthetic value is carefully safeguarded in the cutting of timber and in other forest work. In short, consideration is given to the use which will accomplish the greatest public benefit. * * *

Where there are areas that should be devoted exclusively to public recreation and that can be more quickly opened up as national parks, they should be made such. But that action should be based on the larger consideration of a national system of recreation development. Parks should not be established merely because of a local demand for roads or for advertising some city or

(Forest Notes—Continued.)

town or to boost real estate near the proposed park. Only such areas should be selected as are to be devoted practically exclusively to park development, and then only as a consistent and orderly part of a large plan. Otherwise the areas should remain in the national forests and be handled from the standpoint of recreation development side by side with other resources.

Wherever national forests and national parks are contiguous their administration should be very closely correlated. This is especially important in fire protection and in building roads, trails, and other improvements.

The National Forests and Wild Life.

The Chief of the Forest Service has, in an article which appeared in a recent magazine, set forth the opportunity for the protection and perpetuation of wild life in the United States afforded by the national forests.

The national forests, the article points out are a vast public property, occupying mountain regions in every part of the country from Alaska to Florida and from New Hampshire to southern California, and are the natural home and breeding grounds of our most important big game. Wild life is largely a forest product. It is also a public resource. Its intelligent fostering has always been one of the objects of forestry. Forests are more than trees. They are essentially land areas on which are associated various forms of plant and animal life.

Forest administration should be planned to realize all possible benefits from the land areas handled. It should take account of their indirect value for recreation and health as well as their value for the production of salable material; and of their value for the production of meat, hides, and furs of all kinds as well for the production of wood and the protection of water supplies.

When protected, game tends to multiply up to the limit of its food supply. Since civilized man can not vacate the country to make room for the indefinite multiplication of wild life, some means of taking care of the natural increase of game beyond a certain point is a practical necessity. Hunting holds the increase in check. What man must try to do is to substitute for the natural balance of nature an artificial balance, carefully planned for definite ends. Conservation means simply intelligent forethought in the collective interest.

Areas in the national forests suitable for game propagation, and more valuable to the public if their forage growth is used for this purpose than if it is used for the support of domestic live stock, should be made game sanctuaries. The overflow will tend to stock the surrounding territory. If necessary, the sanctuaries should be stocked with introduced game. Their relative adaptability to different kinds of game and their carrying capacity should be determined. A game census should be taken to learn

present conditions. State and National legislation and State and National administration of game laws should be coordinated, with a view to realizing the largest possible net total of public benefits through a scientific treatment of the wild-life resource. Much of the basic information needed regarding national forest game matters has already been gathered by the Forest Service. The Biological Survey will be depended on for knowledge of the habits and requirements of the different kinds of game, the relative adaptability of different areas for the various species, and the carrying capacity of each area when fully stocked.

Loose-Leaf Forest Manual.

In the interest of efficiency of administration of the national forests, the National Forest Manual (formerly the Administrative Edition of the "Use Book") has been issued in loose-leaf form.

This manual contains the regulations and instructions concerning the use, development, and protection of the national forests. Under the authority conveyed by the act of June 4, 1897, the Secretary of Agriculture is empowered to "make such rules and regulations and establish such service as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction"; a violation of these "rules and regulations" is made punishable as a criminal act. The "instructions" contained in the National Forest Manual are issued by the Forester, and prescribe in detail the procedure which governs the field force in carrying out the regulations. Since both regulations and instructions are subject to frequent amendment, the loose-leaf form of the manual has been adopted in order that the volume in the hands of the forest officers may always be up to date.

When an amendment is issued a new page is printed for substitution or insertion in the volume at the proper point, and distributed to the national forest officers. The substantial binder which holds the manual together can be readily loosened to permit of the introduction of the new matter. Thus forest officers are always equipped with what has been called "The Ranger's Bible" in a form that is in every respect up to date.

The regulations and instructions are grouped under the main headings of "Administration and protection," "Trespass," "Silviculture" (which includes principally timber sales, free use, forest extension, forest investigations, and working plans), "Grazing," "Lands," and "Forest products." Broadly speaking, the regulations and instructions are designed to accomplish the purposes for which the national forests are created, which have been defined by Congress as "to improve and protect the forest within the reservation, or for the purpose of securing favorable conditions of waterflows and to furnish a

continuous supply of lumber for the use and necessities of citizens of the United States."

Although the object of national-forest administration is primarily not the securing of revenue for the Government but the promotion of the public welfare, and although the economic development of the national-forest resources is still at an early stage, the use by the public of these resources necessarily involves the transaction of a very large volume of business which has already resulted in receipts of approximately \$2,500,000 yearly. The National Forest Manual is the fundamental tool to the scientific handling by the Government of a vast public property with a view to utilizing the land most effectively.

Because of the cost of binders, without which the loose-leaf manual is useless, distribution is strictly limited to those directly concerned in the conduct of the national-forest work.

ROAD CENSUS.

The Office of Public Roads is now engaged in gathering comprehensive information in regard to the public highways of the United States which, when complete, will serve as a basis to ascertain the relative durability and economy of the various kinds of roads. Some 15,000 sets of inquiry blanks have already been distributed through the State highway commissions. The purpose is to obtain from each of the 3,000 counties in the country a close estimate of the total mileage and of the mileage of the 10 principal classes into which highways are divided, viz: Brick paved; concrete; macadam with the addition of some other substance, such as asphalt, oil, or tar; plain macadam; gravel; shell; other hard-surfaced roads; sand and clay mixture, properly graded and drained; ordinary earth roads of proper construction; and lastly, unimproved roads. In addition to this, information is desired in regard to the tax rate for the roads and the amount of work and of money they cost the community. Finally, the facts in regard to the bond issues of the counties and their indebtedness for their road systems are desired.

In many of the counties the mileage has never even been estimated. In such cases the office is compelled to rely largely upon voluntary information. Such information will be gladly received. A set of inquiry blanks may be obtained from the office in Washington.

When this inquiry is complete, it will be followed by further inquiries in regard to the condition of the roads from time to time so that ultimately the office will have a large amount of data bearing upon the relationship between the original cost of the highroad and its durability. Such information should be useful to road engineers all over the country, and it is to be hoped that county agents and others interested in the improvement of agriculture will do their best to facilitate the collection of the desired information.

BIOLOGICAL SURVEYS.

(Contribution from the Biological Survey.)

The Biological Survey is now making preparations for an active campaign after July 1, when the new appropriation for the work becomes available, to control the depredations of wolves and other predatory animals on live stock and the damage done by prairie dogs and other obnoxious rodents. A representative of the Survey is now in the West holding conferences with stock growers' associations and other persons interested in order that the work of the Federal Government may receive their active cooperation.

The States chiefly concerned in the matter are those situated on the Great Plains and in the Rocky Mountains. Over much of this section prairie dogs and ground squirrels have increased appreciably because the settlement of the country has annihilated many of their natural enemies. In the more thickly settled portions of the United States the rodents have been killed off, but in regions where the population is still comparatively scanty they exist in even greater numbers than when the country was wild. The Biological Survey, however, is primarily concerned with the destruction of the pests, not on private property but on the National domain. Methods have been so improved that the cost of destroying these pests is about 5 cents per acre, and in any given locality they can be controlled provided the farmers unite for their extermination. The chief difficulty lies in the fact that they cover a vast extent of territory and reestablish themselves so readily that it is comparatively useless to clean one area if they are permitted to thrive on adjoining ones. It has been said that to do this is much like cleaning up one's own yard only to have it reseeded with weeds from a neighbor's neglected garden.

The campaign against coyotes and other predatory animals is regarded as being particularly important at this time because of the existence of rabies over a wide region in the northwestern States. It is probable that for a long time rabies has existed among the wolves and coyotes of the West. But with an increasing population the danger to human beings and live stock is much greater.

HOW TO ORDER PUBLICATIONS.

(Contribution from the Division of Publications.)

An order for any publications desired sent to a correspondent, or for use of the particular bureau or office, should be drawn on the Chief of the Division of Publications. All orders should be accompanied by addressed franks.

If the publications requested are in stock the orders will be transmitted to the Superintendent of Documents, Government Printing Office, whence, in accordance with the law of August 24, 1912, all publications of the Department must be mailed. After the orders have been filled in the office of the Superintendent of Documents, they are stamped and returned to the Division of Publications, there assorted, and sent back to the issuing offices, in order that they may be filed with the original correspondence.

Often the orders are returned from the Superintendent of Documents with a circle in lead pencil around a particular number. This is a symbol used in the Office of the Superintendent of Documents to indicate that the publication is no longer in stock.

In cases where the publications are to be sent to a number of addresses, only a single order is required, but in all cases the franks should be written in the office issuing the order.

The publications of the department are divided generally into two classes, namely, the miscellaneous publications and the Farmers' Bulletins, and separate order blanks for each class should be used, because a separate record of each class of publications is kept. Farmers' Bulletins, the new series of department bulletins, and circulars are sent to anyone desiring them, as long as the supply lasts.

Whenever a new publication, or a reprint of any old one, is received from the Government Printing Office, copies are sent to the officials having charge of the publication work in the respective bureaus and offices. The receipt of these publications serve to notify the office that the distribution is about to begin. These notification copies are deposited in the department post office and distribution from that office is made by placing the publications in the mail boxes of the various bureaus and offices.

Thousands of letters are daily received in the Division of Publications requesting publications and information on agricultural subjects, and suitable publications are promptly forwarded. If the letters require further attention they are then referred to the proper offices. Therefore, when a letter shows it has been previously received in the Division of Publications and has the words "Farmers' Bulletins Sent" and "Misc. Pubs. Sent" stamped on it, it is notice to other offices that such of the information requested therein as it is possible to supply by sending publications has been furnished.

The Division of Publications is not in a position to furnish envelopes for the use of other bureaus, offices, and divisions, except such as are to be used in the actual mailing of publications from the mailing rooms of the Office of the Superintendent of Documents, Government Printing Office.

THE LIBRARY'S SOURCES.

(Contribution from the Library.)

The Library now contains approximately 135,000 books and pamphlets and receives currently more than 2,000 periodicals. To supplement its resources, the library is able to borrow for official use from the collections of other libraries. The following libraries in the city have lent books most frequently in the past: Army War College, Bureau of Education, Bureau of Foreign and Domestic Commerce, Bureau of Fisheries, Bureau of Labor, Bureau of Railway Economics, Bureau of Standards, Department of Justice, Geological Survey, Hygienic Laboratory, Library of Congress, National Museum and Smithsonian Institution, Pan American Union, Patent Office, Public Library, Surgeon General's Library, and Weather Bureau. Thus it may be said that for official purposes the library can secure practically any book in Washington. A number of books are also borrowed each year from libraries outside of the city. The maintenance by the Library of Congress of a union catalogue of a number of the large reference libraries of the country has not infrequently been of assistance in tracing a much-needed book not available in Washington.

The library maintains a dictionary card catalogue, the cards for authors and the cards for subjects being filed in one alphabetical arrangement, as in an encyclopedia. The catalogue is more than a catalogue of the possessions of the department library, since it contains cards for material of interest to the department found in other libraries. Thus each year progress is made toward making it more nearly a bibliography of agriculture and the allied sciences.

The reading rooms of the library, namely, the general reading room and the periodical reading room, are more commodious and comfortable than were those in the old quarters. Owing to the fact that the current periodicals are circulated extensively to members of the scientific force, the latest numbers are frequently not available in the periodical reading room, but are always recalled when needed for special use. Current numbers of farm papers are, however, generally available in the reading room.

Attention is called to the select list of books and pamphlets recently added to the library which is found elsewhere in this circular. Those interested in keeping in close touch with the literature on their subjects will also find it to their advantage to make a weekly visit to the new book shelves in the general reading room of the library. Practically all the new books stay on these book shelves for one week. Therefore, by visiting the library on the same day each week it is possible to keep in touch with the accessions to the library. A large number of the books added to the library are purchased at the special request of various workers in the department, and these, after

staying on the new book shelves for a week, are, as a rule, sent direct to persons requesting them. Others interested in them may later secure the use of them by having their names penciled on the slip for the purpose contained in each book.

Persons wishing to see the new books more promptly can have the privilege of taking them home over night, provided they return them promptly the next morning.

SELECTED LIST OF ACCESSIONS.

April, 1915.

AGRICULTURE.

- Canada—Board of grain commissioners. Grain inspection in Canada, by R. Magill. 64 p. Ottawa [1914]
Deutsche landwirtschafts-gesellschaft—Saatzuchtabteilung. Sechsjährige winterroggen-anbauversuche (1905-1910). 581 p. Berlin, 1914.
Deutscher landwirtschaftsrat. Bericht . . . betreffend feldversuche über die wirkung verschiedener stickstoffhaltiger düngemittel. 229 p. Berlin, 1914.
Deutscher landwirtschaftsrat. Bericht . . . betreffend versuche über rahmlieferung an molkereien. 227 p. Berlin, 1914.
Hannover. Königliche technische hochschule—Laboratorium für die technische moorverwertung. Arbeiten, bd. 1, hft. 1. Braunschweig, 1914.
Martiny, Benno. Prüfung zweier melkmaschinen, der Omega [von] B. Martiny . . . und der Heureka [von] P. Vieth. 141 p. Berlin, 1914.
Quear, C. L. Soils and fertilizers for public schools. Ed. by O. L. Boor. 202 p. Muncie, Ind. [1915]
Tunis—Direction générale de l'agriculture, du commerce et de la colonisation. La culture mécanique en Tunisie. 59 p. Tunis, 1914.

AGRICULTURAL ENGINEERING.

- Edwards, E. P. Electricity as a factor in progressive agriculture. 24 p. New York, 1912.
Missouri—State board of agriculture. Better roads. 90 p. Columbia, Mo. [1914]
Moritz, E. A. Working data for irrigation engineers. 395 p. New York, 1915.
National electric light association—Committee on electricity in rural districts. Report, 1911-1913. New York, 1911-13.
New York (State)—Water supply commission. Water power for the farm and country home. 2d ed. 45 p. Albany [1911]
Parsons, J. L. Land drainage. 165 p. Chicago, 1915.
Williams, C. H. Use of electricity for irrigation and on the farm. 59 p. New York, 1912.

HORTICULTURE.

- California—State commission of horticulture. Apple growing in California. By G. P. Weldon. 124 p. [Sacramento] 1914.
Chile—Ministerio de relaciones exteriores—Sección comercial. Estudio sobre la producción y futuro comercio de la fruta en Chile. 31 p. Santiago de Chile, 1914.
Gardeners and florists' annual for 1915. New York [1915]
Howard, W. L. Principles and practice of plant propagation. 92 p. Columbia, Mo. [1914]
Mann, C. W. The handling of Porto Rican oranges, grapefruit, and pineapples. 59 p. San Juan, P. R., 1914.
Noter, R. E. D. M. de. Les ignames et leur culture dans les cinq parties du monde. 65 p. Paris, 1914.
Torrey, G. S. The partridge berry. 12 p. St. John's, Newfoundland, 1914.

FORESTRY.

- Ekman, Wilhelm. Skogsteknisk handbok. 285 p. Stockholm [1905]
Illick, J. S. Pennsylvania trees. 232 p. Harrisburg, Pa., 1914.
Smythies, E. A. The resin industry in Kumaon. 14 p. Calcutta, 1914.

DOMESTIC ANIMALS.

- Boyer, M. K. Poultry secrets, gathered, tested, and now disclosed. [16th ed.] 64 p. Philadelphia, 1914.
Fuller, V. E. Feeding cows for profit. 46 p. Philadelphia, 1914.
Graham, J. C. Massachusetts boys' and girls' poultry clubs. . . Primer of instruction. 24 p. Amherst, Mass., 1914.
Harter, M., and Wilsdorf, G. Die bedeutung des schweines für die fleischversorgung. 381 p. Berlin, 1914.
Insulander, Nils. Berättelse över tvänne med understöd af företagna studieresor i Storbritannien, Belgien och Holland 1912, i Tyskland och Frankrike jämte Jersey och Guernsey 1913. 182 p. Linköping, 1914.

Missouri—State poultry experiment station, Mountain Grove. The poultryman's guide. Mountain Grove [1915]

[Neuendorf, A. F.] Unser nutzgefögel im dienste der land- und volkswirtschaft. 174 p. [Antigo, Wis., 1915]

New York (State)—Bureau of farmers' institutes. The poultry industry in New York state. p. 205-445. [Albany, 1914]

Smith, A. C. The raising and care of guinea pigs. 35 p. Kansas City, Mo. [1915]

Spencer, J. B. Swine husbandry in Canada. 72 p. Ottawa, 1914.

Walter, Mark. Ever-ready money. 124 p. [Kalamazoo, Mich., 1914]

VETERINARY SCIENCE.

Canada—Dept. of agriculture—Health of animals branch. Bulletin no. 15. Hog cholera. Ottawa, 1913.

Canada—Dept. of agriculture—Health of animals branch. Bulletin on contagious abortion. 6 p. Ottawa, 1913.

Jahresbericht über die leistungen auf dem gebiete der veterinärmedizin . . . 1913. v. 33. Berlin, 1914.

Luckey, D. F. Sanitary watering places for horses and the control of glanders in Missouri. 13 p. Columbia, Mo. [1914]

Moore, V. A., and Fitch, C. P. Exercises in bacteriology and diagnosis for veterinary students and practitioners. 154 p. Boston [1914]

Saunders, C. G. Canine medicine and surgery. 249 p. Chicago, 1915.

CHEMISTRY AND PHYSICS.

Alderhalden, Emil. Handbuch der biochemischen arbeitsmethoden. v. 8. Berlin, 1915.

Cohn, Georg. Die organischen geschmacksstoffe. 936 p. Berlin, 1914.

Delépine, S. A. Report to the Local government board upon the effects of certain condensing and drying processes used in the preservation of milk upon its bacterial contents. 49 p. London, 1914.

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Gr. Brit.—Parliament—House of commons—Select committee on patent medicines. Report. 2 v. London, 1914.

Rogers, Allen. Industrial chemistry. 2d ed. 1905 p. New York, 1915.

Rutherford, Ernest. Radioactive substances and their radiations. 699 p. Cambridge [Eng.] New York, 1913.

PHARMACY.

International congress of pharmacy. 11th, The Hague, 1913. Compte rendu. 2 v. The Hague, 1913.

HOME ECONOMICS.

Auderson, H. S. Food and cookery . . . 3d ed. 127 p. Loma Linda, Cal., 1915.

[Bell, Bah] Household arts. 88 p. Columbia, Mo. [1915]

Gr. Brit.—Board of education. Memorandum on methods of providing meals for children in connection with public elementary schools and on dietaries suitable for the present circumstances. 20 p. London, 1914.

Laurel, Miss. St. John's church. The Laurel cook book . . . Rev. . . . Ed. by Mrs. George Gardiner, Mrs. McWhorter Beers. 368 p. Laurel, Miss., 1914.

Lindlahr, Mrs. Anna, and Lindlahr, Henry. The nature cure cook book. 469 p. Chicago [1915]

New York (City)—Mayor's committee on food supply. How to use left-overs. 32 p. [New York] 1915.

New York (City)—Mayor's committee on food supply. Information about fish and how to use them. 26 p. [New York] 1914.

New York (City)—Mayor's committee on food supply. Substitutes for meat. 34 p. [New York] 1914.

Virginia—State normal and industrial school for women, Harrisonburg. Practical work for rural schools. 47 p. Harrisonburg [1914]

BOTANY.

Azevedo de Menezes, Carlos. Flora do archipelago da Madeira. 282 p. Funchal, 1914.

Beattie, R. K. Bihliography of the chestnut tree hight fungus. 32 p. Harrisburg, Pa., 1914.

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König, F. J., and Rump, E. Chemie und struktur der pflanzen-zellmembran. 88 p. Berlin, 1914.

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Hindle, Edward. Flies in relation to disease; blood-sucking flies. 398 p. Cambridge, 1914.

Ingersoll, Ernest, ed. Alaskan bird-life as depicted by many writers. 72 p. New York, 1914.

International catalogue of scientific literature. N. Zoology. 13th annual issue. London, 1914.

La Rue, G. R. A revision of the cestode family, Proteocephalidae. 350 p. [Urbana, Ill., 1914]

Massachusetts Audubon society. Audubon chart no. 1-3. Springfield, Mass., 1912-13.

Morley, W. S. Bee-keeping for profit. 124 p. London, New York, 1914.

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